The Iron Age

A Review of the Hardware, Iron and Metal Trades.

Published every Thursday Morning by DAVID WILLIAMS, No. 83 Reade Street, New York. Entered at the Post Office, New York, as Second-Class Matter.

Vol. XXIV: No. 23. *New York, Thursday, December 4, 1879.* *$4.50 a Year, Including Postage. Single Copies, Ten Cents.*

An English Testing Machine.

Machinery for testing metals is so rapidly becoming a necessity in all large establishments working or using large quantities of iron or steel, that standard types employed abroad possess much interest as revealing the direction in which perfection is sought. A recent design, which is looked upon by *Engineering* as embodying many important features, is that shown in the accompanying engravings, which represent the testing machine built by Messrs. Greenwood & Batley, of Leeds, for the engineering laboratory of the University College, according to the designs of Prof. Kennedy. The principal objects aimed at were facility in making accurate measurements, ease of access to all parts of the machine, and the removal of all impediments to a full view of the piece under test. By referring to Fig 1, it will be seen that the latter is firmly held between two collar dies, one of which, that to the right, is connected to the piston of a hydraulic ram, while that to the left transmits the stress to a steelyard and weight. The right collar is fastened to a vertical pin passing through a crosshead resting on the truck shown in the engraving. The same crosshead, it will be seen, carries four nuts for four screws, the front ends of which are connected to the head of the ram, placed on the extreme right of the bedplate of the machine. This ram is supplied with water by the pump drawn on the left in our prospective view, Fig. 1. For the sake of adjusting the distance between the collar dies holding the test piece, the outer ends of the four screws are fitted with pinions, into which a spur wheel gears. The latter can be worked by a pinion through the hand wheel, seen at the end of the ram piston. The hydraulic pressure is thus transmitted through the four screws to the crosshead truck, the pin and collar die to the test piece. From the latter it is carried through the second left hand collar die to a pin attached to a cast-iron block, which embraces two main pull-bars, transmitting the pull to knife edges on the strong curved knee-lever, prominently shown in the engraving. The downward pressure passes directly to the long steelyard, on which the weight may be run in and out by the simple contrivance shown. The upward component of the pressure on the large knee-lever is taken by two knife-edged struts, clearly visible in the drawing.

For bending tests, the ordinary holders are taken out and some small changes, easily effected, are made, by which the pull is transmitted through the test piece, which is placed on adjustable knife edges on the crosshead. For torsional tests, a pair of chain wheels, shown separately in the perspective view, are provided. They have large hollow passes, through the center of which the test piece is placed, being held in the middle by a lever. While the latter is connected by a rod to the levers of the scales, the ends of the chains are attached to the crosshead truck, and the test is made in the same way as the direct tensile test.

One of the special features of Professor Kennedy's machine is the arrangement he has adopted for measuring very small extensions. Its general arrangement is shown in Figs. 2 and 3. It is intended to measure quantities as small as 1-10,000th of an inch, and seems to do this with reasonable certainty. Its special characteristics are (1) that it measures extensions between two fixed points on the test piece, and is, therefore, unaffected by the "give" of the holders or any other movable parts, and (2) that the magnifying of the extension is effected optically, and without the use of any parts which have measurable backlash, such as racks or ordinary pin links. Referring to Fig. 3, *a* is a telescope placed upon the frame *h* of the machine just under the boss of the hand-wheel, so that its eye-piece is conveniently placed for an observer who is also controlling the position of the load on the steelyard. Through the telescope the observer can read, by their reflections upon two mirrors, *b b*, a pair of scales (Fig. 2) placed close to the roof, about 11 feet above the machine. The test piece *f* is held in the machine in the usual fashion; it carries two light clips, *e e*, which are sufficiently held in place by small center punch marks. From each of these clips projects horizontally a steel pin, as seen in Fig. 3. The mirrors *b*, which are silvered on the face, are connected to horizontal spindles *c*, carried by light brackets *g*, resting on the frame of the machine. The axis of each spindle is made to lie in the plane of its mirror. On the inner end of each spindle is a light lever carrying a steel pin like that on the clip. To transmit motion between these two pins, simple drop pieces *d d* are used, weighted for steadiness, and having nothing but V-notches which drop on to the pins. By this arrangement any motion of either clip *e* acts at once in tilting the corresponding mirror, and, therefore, changes the particular point of the scale, which is apparently cut by the cross wire in the telescope. The scales are placed on runners, and can be moved by cords, so as to adjust them to read zero when there is no load on the piece; at each addition of load the readings of both are noted, and the sum (or difference) of the two readings shows the total extension. With the proportions adopted the extension is magnified about 140 times, so that 1-10,000th of an inch becomes about 1-70th of an inch on the scales, a quantity which, with a good telescope and some practice, ought to be easily enough read. Somewhat crucial tests have failed to detect any symptom of backlash in this apparatus, the neat arrangement of which is due chiefly to Mr. R. H. Willis, who has for some time past been working with Prof. Kennedy in carrying out his laboratory scheme. It has been found an improvement to hold the bracket *g* in position simply by a suspended weight.

The machine is constructed for a maximum load of 45 tons, and it was shown by experiments that its limits of error do not exceed 1 lb. per ton. It can exert its maximum power either in direct tension or direct compression, or at the center of any beam up to 48 inches between supports, while either for tension or compression it will take in pieces of 75 inches clear length.

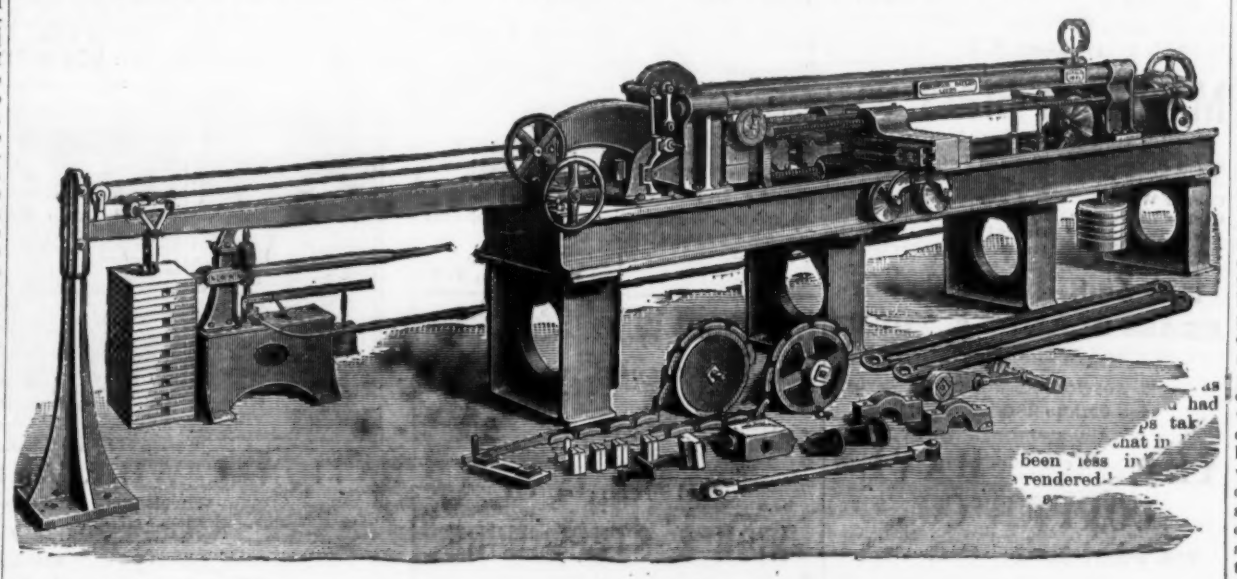
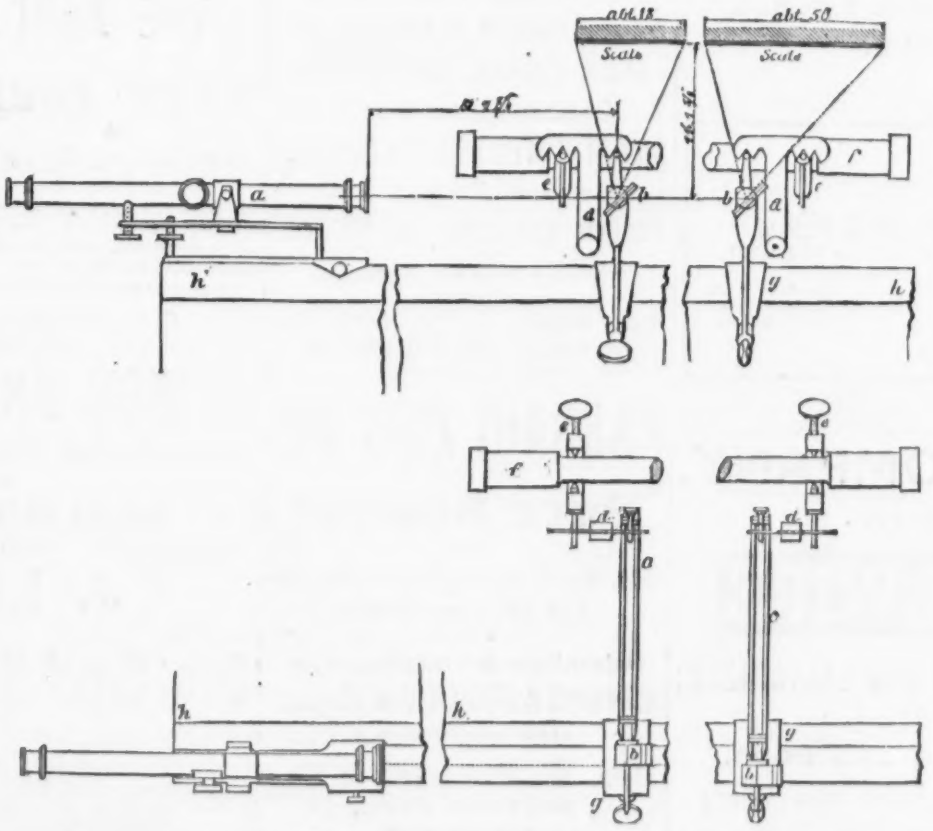


Fig. 1.—Perspective View.

PROF. KENNEDY'S IMPROVED TESTING MACHINE.



Testing Machine.—Figs. 2 and 3.—Elevation and Plan of Willis's Measuring Apparatus.

SCIENTIFIC AND TECHNICAL.

Herr Falk has introduced the following method for

PRODUCING PHOTOGRAPHIC ORNAMENTATION ON METALLIC SURFACES,

the latter being coated with a photographic film and then exposed under a transparent positive. By this arrangement the parts lying beneath the dark places of the positive are not affected by the light, and are consequently capable of being etched. With curved surfaces a print taken in fatty ink on paper by a photographic method is transferred to the metal, and all the parts covered with the ink are by this means protected from the etching. It is a peculiarity of this process that the etching fluid colors all the etched places black, and this adds considerably to the effect of the whole.

M. Niadet, who is a prominent French electrician, has brought before the French Academy

A NEW ELECTRIC BATTERY,

the main features of which are the following: It has for positive electrode a zinc plate immersed in chloride of sodium solution, while the negative electrode is a carbon plate, surrounded by fragments of carbon and chloride of lime in a porcelain vessel (porcelain or parchment paper). The hypochlorous acid of the chloride of lime attacks the zinc, producing chloride of zinc, or the lime, producing chloride of calcium, both of which salts are very soluble, and very good conductors. The zinc in presence of chloride of lime is not sensibly attacked; hence these batteries remain for an indefinite time at rest without being used up, the action only commencing when the circuit is closed. This property is in many cases of capital importance. The use of marine salt is justified by its cheapness and the high conductivity of the solution. Other chlorides were tried; but none gave such good electromotive force. The electromotive force of the battery was at first over 1.6 Volt; and after six months' rest it was still over 1.5 Volt.

We have had occasion repeatedly to refer to the importance of the use of gelatine for photographic purposes, and make room, therefore, for the following description of a method of

PURIFYING GELATINE,

which is frequently contaminated by ingredients both mechanically mixed and chemically combined with it. It is placed in cold water until it has become swollen, transferred to a baker heated to 100° F., and then mixed with white of egg in the proportion of two parts of albumen to from four to five parts of dry gelatine. After the whole has been converted into froth with the aid of an egg-beater, the water-bath in which it has been placed must be rapidly raised to a point approaching 212 degrees, and then allowed to remain undisturbed for some time. The coagulating albumen carries all solid impurities to the surface of the solution.

M. Jos. Dépierre has recently given some interesting details on

GUYARD'S VIOLET

before the Société Industrielle de Rouen. This interesting dye is obtained in the following manner: A mixture of sulphate of copper and ammonia is treated with ferrocyanide of potassium. If the precipitate obtained is washed, dried and exposed to a temperature of 338° F., it loses both cyanogen and ammonia, oxidizes and assumes a fine violent color. A higher temperature changes the violet to blue, and finally to a pale green. M. Dépierre has found that the color resists caustic lime, chloride of lime, hydrochloric acid or tin salts better than any other violet known.

Cryolite, a fluoride of calcium and sodium, has for many years been a valuable raw material for the manufacture of soda, and has been imported into this country from Greenland in considerable quantity by the Pennsylvania Salt Company. Recently an important branch of industry has been founded on the same mineral,

THE MANUFACTURE OF HOT-CAST PORCELAIN,

which, although it originated in this country, has very rapidly spread abroad. Analyses of the product show that it is rich in silica, and that, besides, its ingredients are soda, potassa, lime and about 10 per cent. of cryolite. The following is the composition of a sample:

Silica	72.20	Soda	12.51
Alumina	4.35	Fluor	3.55
Lime	3.95		
Potassa	3.15	Total	99.71

Many manufacturers of pottery are said to fear the destructive action of fluor vapors upon the walls of their furnaces, but it is asserted that the advantages of using cryolite fully counterbalance any inconvenience due to that source.

Mr. H. Wooseldine, in a letter directed to the Editor of the *Engineer*, advocates the laying of

RAILS CUT TO A MITER

as very useful in preventing spreading at the ends of the bars, and the jolting, the wear and tear of wheels, tires, &c., of which it is one of the main causes. He states that Tooth's miter joints, laid down on the Great Eastern Railway of Great Britain, have stood the severe test of a very large traffic with much success.

Before the last meeting of the Oesterr. Ingenieur-u. Architekten-Vereines, Herr Rybar lectured on

PORTABLE PLANT FOR CREOSOTING TIES

according to a method devised by Blythe. It has appeared strange that notwithstanding the unquestionable success of the principal methods of impregnation used in Austria, those with creosote and chloride of zinc, their employment has not extended. This, Herr Rybar stated, was due to the following facts: The cost of an establishment for preservation of ties was so great that generally only one could be built, and that, therefore, the bulk of the lumber required by the road had to be carried to one locality, and after being treated was again distributed along the line. Thus there was added to the cost of creosoting the expense of a double carriage, besides the first outlay for real estate, sidings and plant. In order to overcome these disadvantages, which clearly tend to counterbalance the saving effected by longer wear of the ties, Blythe makes his plant portable; that is to say, it is entirely contained in a special railway car, which may be taken to the various stations where the ties are delivered and perform its work on the spot. Blythe's system differs somewhat from those ordinarily used. He first exposes the tie to the action of the superheated steam, which is gradually saturated with carbolic acid, the office of which is to destroy all albuminous matter, the time of action varying from 5 to 15 minutes. If continued too long it extracts the entire amount of the rosin in the wood and effects the continuity of the fiber. The ties are then put into a bath containing a mixture of equal parts of tar and creosote, which is forced into the wood by a pressure of more than six atmospheres. The average capacity varies from 300 to 400 ties per day. In view of the fact that 7,000,000 acres of timber are cut each year for ties for railroad use, it may be important to American roads to inquire into this simplified method, which has some points of merit.

Col. P. De la Sala claims to have invented a simple, effective and inexpensive method for

RENDERING WOOD FIRE-PROOF.

He dissolves carbonate of potash or soda in water, and, after heating to the boiling point, adds hydrate of lime, graduating the strength so that for potash the specific quantity does not exceed 1.6, and for soda does not go beyond 1.5. With this lye all the exposed parts of buildings, vessels, &c., are saturated, while boards, planks or timbers are immersed in it for a period varying from four to twelve hours, according to the depth of the coating required or the compactness of the fiber of the wood. For fire protection of building timbers Col. De la Sala considers a fire-proof layer one-eighth of an inch in depth amply sufficient. Veneers must be passed through steel rollers immediately after having been operated upon.

A Lucky Find.—The Sydney *Morning Herald* mentions a report of a great find of gold at Big Hill, Burkendong: "A man named Law, who had worked there some 20 years ago, has been working there again for the last 6 weeks, and it is reported that, close to a shaft which Dr. Bohme spent $1500 to $1900 on some six or seven years ago, he dropped upon three nuggets weighing 11, 14, and 30 pounds, with a lot of fine gold. He gave up the claim to an old man named Wallace, who lived on Spring Creek, and cleared out with his treasure, taking it himself to Sydney. Some very large finds were made in the same locality years ago. The spot is on the top of a high mountain, and where the big finds have been made is not more than 20 feet sinking."

Reckless Coal Miners.—A number of miners employed at the Hawarden Colliery near Chester, England, were summoned for refusing to work with safety lamps. The men had been allowed to work with a naked light, but four slight explosions of gas having occured, the manager ordered the men to use the safety lamps. They refused on the ground that they could not see so well. As the company did not wish to press the cases, the magistrates sitting at Hawarden ordered the men to return to work and pay expenses. Some time afterward, however, 100 men went down the pits and brought up their tools, and left their work rather than use the safety lamp.

The report of the Middlesbrough Chamber of Commerce, just issued for the month of October, states that Messrs. Bolckow, Vaughan & Co. have for a time ceased the manufacture of Cleveland steel at Eston, on account of some mechanical difficulty with the converters; but they are about to put down a plant at a cost of $50,000, and on an improved principle, to manufacture Cleveland steel exclusively.

A dispatch from Berlin says: "The German Postmaster-General is preparing a proposal to be presented to the Reichstag, under which the Post Office Department will have charge of the entire freight traffic of the German railways and become the general carrier for the public."

Metals.

ANSONIA
BRASS & COPPER CO.,
No. 19 Cliff Street,
Phelps Building, NEW YORK.
MANUFACTURERS OF
BRASS AND COPPER
IN
Sheets, Bolts, Rods, Wire, &c.
Seamless Brass & Copper Tubing.
Ansonia Corrugated Stove Platforms.
PURE COPPER WIRE
For Electrical Purposes, Bare and Covered.
Phosphor Bronze Rods for Pumps, &c.
ANSONIA ★ REFINED INCOT COPPER.

PHELPS, DODGE & CO.
IMPORTERS OF
TIN PLATE,
ROOFING PLATE,
Sheet Iron, Copper, Pig Tin, Wire, Zinc, &c.
MANUFACTURERS OF
COPPER AND BRASS.
CLIFF STREET, NEW YORK.

SCOVILL MFG CO
BRASS,
HINGES, WIRE, GERMAN SILVER.
PHOTOGRAPHIC GOODS.
BUTTONS,
CLOTH AND METAL.
DEPOTS, 419 & 421 Broome St., N. Y. 177 Devonshire St., Boston. 183 Lake St., Chicago.
FACTORIES, Waterbury, Conn. New Haven, Conn. New York City.

DICKERSON, VAN DUSEN & CO.,
Importers of
Tin Plate, Pig Tin, Sheet Iron, Cooper, Wire, Zinc, Etc.
29 & 31 Cliff St., cor. Fulton,
DICKERSON & CO., Liverpool. NEW YORK.

CONDIT, WICK & CO.,
Iron Manufacturers and Merchants,
Wholesale Dealers in
Sheet, Tank and Plate Iron, Nails, Glass, Horse Shoes, Horse Nails, and other articles of HEAVY HARDWARE.
CLEVELAND, OHIO.

N. & G. TAYLOR CO.,
Philadelphia.
ESTABLISHED 1810.
Manufacturers, Importers and Dealers, Wholesale and Retail, in all kinds of
TIN PLATES.
A specialty for sizes used in the manufacture of
Cheese Vats, Cream Pans, Milk Cans, Cotton Cans, &c.
N. & G. TAYLOR CO. Can make any size
Sheet Tin, Sheet Zinc, Sheet Copper, Sheet Brass, Roofing Tin, Sheet Iron, Sheet Lead.
Send for our special prices and list of sizes.

ABRAM S. HEWITT, President. WM. HEWITT, Vice President.
JAMES HALL, Treasurer. E. HANSON, Secretary.
THE TRENTON IRON COMPANY,
(INCORPORATED 1847),
TRENTON, NEW JERSEY,
MANUFACTURERS OF
IRON and STEEL WIRE
OF ALL GRADES,
BRIGHT, ANNEALED, COPPERED, TINNED AND GALVANIZED;
Iron and Steel Wire Rods;
EXTRA QUALITIES OF BAR IRON AND RODS.
Best Qualities of Gun-Screw and Charcoal Iron Wire; Crucible, Siemens-Martin and Bessemer Steel Wire.
Wire Straightened and Cut to Lengths.
Represented in New York by COOPER, HEWITT & CO., 17 Burling Slip.

BRODERICK & BASCOM,
MANUFACTURERS OF
IRON WIRE ROPE. STEEL WIRE ROPE.


800 N. Main St., St. Louis, Mo.

Metals.


Waterbury Brass Co.
CAPITAL, - - $400,000.
Sheet, Roll and Platers' Brass,
GERMAN SILVER,
Copper, Brass and German Silver Wire,
BRASS AND COPPER TUBING,
COPPER RIVETS & BURS,
BRASS KETTLES,
Door Rail, Brass Tags,
PERCUSSION CAPS,
POWDER FLASKS,
Metallic Eyelets, Shot Pouches, Tape Measures, &c.
And small Brass Wares of every Description. Cartridge Metal in Sheets or Shells a Specialty.
Sole Agents for the
Capewell Mfg. Co.'s Line of Sporting Goods and Wood's Paper Shot Shells.
DEPOTS: 296 Broadway, New York. 189 Eddy St., Providence, R. I.
Mills At WATERBURY, Conn.

Manhattan Brass Co.,
Manufacturers of
Sheet Brass, Brass Wire, Copper Wire, Copper Rivets, Brass Tubing, Zinc Tubing,
Olmsted Patent Oilers, Prior Patent Oilers, Broughton Patent Oilers, Brass, Tin & Zinc Oilers, Brass Butt Hinges, Hurricane Lanterns.
Fire Sets, Fenders, &c.
BRASS BLANKS & TUBES
OF EVERY DESCRIPTION TO ORDER.
OFFICE AND WORKS,
R[illegible]ve., 27th to 28th St., New York.

SLIT
THE [illegible] HAVEN COPPER CO.,
255 Pearl Street, New York.
Manufacturers of and Dealers in
Braziers' & Sheathing COPPER.
Kettle Bottoms, Bolts, Circles, Rivets, Ingot Copper, Spelter, Solder, &c.

Metals.

The Plume & Atwood Mfg. Company,
MANUFACTURERS OF
SHEET and ROLL BRASS and WIRE,
German Silver and Gilding Metal,
Copper Rivets and Burs,
Kerosene Burners,
Lamp Trimmings, &c.
80 Chambers Street, New York.
13 Federal Street, Boston.
109 Lake Street, Chicago.
Rolling Mill, THOMASTON, Ct. Factories, WATERBURY, Ct.

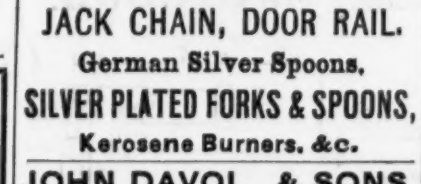
Bridgeport Brass Co.,
MANUFACTURERS OF
Sheet and Roll Brass,
Brass & Copper Wire & Tubing,
German Silver Metal and Wire,
Copper and Iron Rivets.
OILERS and CUSPADORES, LANTERNS and TRIMMINGS, Clocks & Fly Fan Movements.
LAMPS and TRIMMINGS, KEROSENE BURNERS, PLUMBERS' MATERIALS.
Particular attention paid to cutting out Blanks and manufacturing Metal Goods.
MANUFACTORY, *Bridgeport, Conn.* WAREHOUSE, *19 Murray St., N. Y.*

Harrison Wire Company,
ST. LOUIS, MO.
THOS. W. FITCH, Prest. and Treas. CHAS. FISH, Secretary.
MANUFACTURERS OF
All kinds of
IRON & STEEL WIRE
AND
Wire Mill Specialties.

Holmes, Booth & Haydens,
WATERBURY, CONN.
NEW YORK, 49 Chambers St. BOSTON, 18 Federal St.
Manufacturers of all kinds of
Brass, Copper & German Silver,
ROLLED AND IN SHEETS.
BRASS & COPPER WIRE,
Tubing, Copper Rivets & Burs.
BRASS & IRON
JACK CHAIN, DOOR RAIL.
German Silver Spoons.
SILVER PLATED FORKS & SPOONS,
Kerosene Burners, &c.

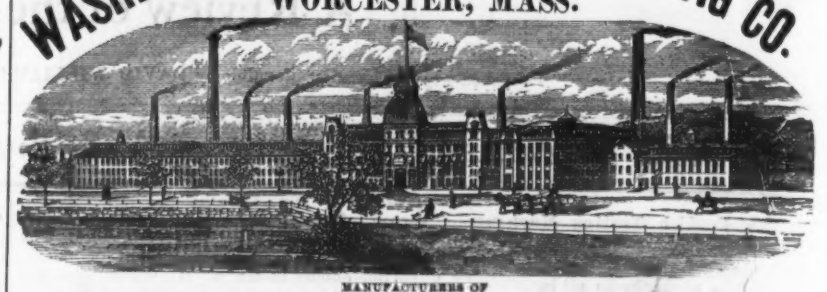
JOHN DAVOL & SONS,
Agents for
Brooklyn Brass and Copper Co.,
Dealers in
Ingot Copper, Spelter, Lead, Tin, Antimony, Solder & Old Metals.
100 John Street, N. Y.

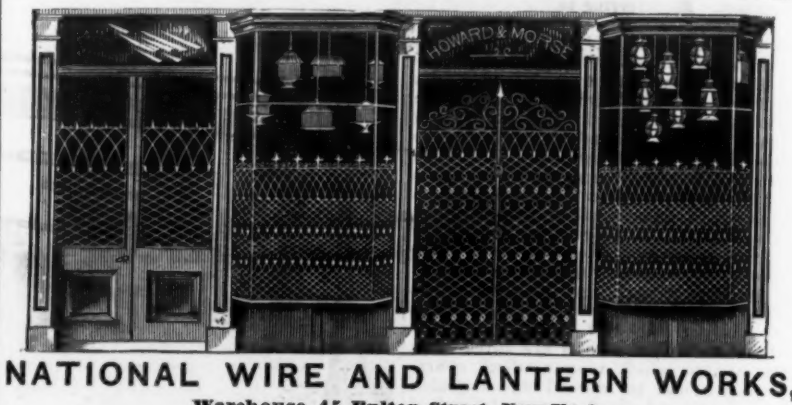
PASSAIC ZINC CO.
Manufacturers of
Pure Spelter
FOR
Cartridge Brass, Gas Fixtures, Bronzes
AND ALL FINE WORK.
Also for
Galvanizers & Brass Founders.
MANNING & SQUIER, Gen'l Agents
113 Liberty Street, N. Y.

Geo. W. Prentiss & Co.,
HOLYOKE, MASS.,
MANUFACTURERS OF
IRON WIRE.

Bright, Coppered, Annealed and Tin Plated. Also GUN SCREW WIRE.
Of all sizes straightened and cut to order.

GAUTIER
WIRE
See page 34.

Wire, etc.

PHILIP L. MOEN, President & Treasurer. CHAS. F. WASHBURN, Vice-President & Sec'y
WASHBURN & MOEN MANUFACTURING CO.
Established 1831.
WORCESTER, MASS.

MANUFACTURERS OF
Iron and Steel Wire,
PATENT STEEL BARB FENCING,
Patent Steel Wire Bale Ties.
WIRE RODS of all Grades; Round Iron, Rivet quality, 3-16 in. to ¼ in., cut to any length. Owners and exclusive Operators of the **PATENT CONTINUOUS ROLLING MILL,** producing Iron and Steel WIRE, in coils of 100 pounds, without SEAM OR WELD. **Patent Galvanized Telegraph Wire,** Market and Stone Wire, Annealed Fence and Grape Wire in long lengths; Coppered Fall-Ball Wire; Rope, Bridge, Bolt, Screw, Rivet, Buckle and Chain Wire. Wire for the manufacture of Card Clothing, Heddles, Reeds, &c. Piano-string Covering Wire, Tinned Broom Wire and Tinned-plated Wire of all sizes. A specialty is made of Cloth Machinery, Gun Screw and Spiral Spring Wire, and Refined Wire to Pattern for particular purposes, from selected stamps of Norway Iron. Any grade of Wire furnished, Annealed, Bright, Polished, Coppered, Galvanized or Tin Plated. Wire furnished, Straightened and Cut to any length. **Steel Crinoline Wire,** Patent Linen finish. **Unrivaled Steel Music Wire.** Steel Wire for Springs, Needles and Drills. Market Steel Wire kept in stock, all sizes.
WAREHOUSE, 21 CLIFF STREET, NEW YORK. St. Louis Office, 717 North 2d Street



NATIONAL WIRE AND LANTERN WORKS,
Warehouse, 45 Fulton Street, New York.
HOWARD & MORSE,
Manufacturers of
Brass, Copper and Iron WIRE CLOTH,
Locomotive Spark Wire Cloth, Iron Wire Bolting Cloth,
Ship and Railroad Lanterns, Signal Lights, Conductor's Lantern
ADJUSTABLE GLOBE HAND LANTERN,
Desk and Office Railing, Riddles, Coal and Sand Screens, Nursery Fenders and Spark Guards, Ornamental Wire Fence.

WORKS AT TRENTON, N. J.
ROEBLING'S WIRE ROPE
New York Office AND Warehouse AT 117 Liberty Street
THE JOHN A. ROEBLING'S SONS CO.,
MANUFACTURERS OF
WIRE ROPE OF Iron, Steel and Copper FOR Hoisting Purposes of all kinds, for Ferries, Stays, Ship Rigging, Sash Cords, Lightning Rods, &c., &c. Suspension Bridge Cables.
GALVANIZED Telegraph Wire, Market Wire, Vineyard Wire.
Iron and Steel WIRE FOR Market Wire, Fence Wire, Bridge Wire, Chain Wire, Buckle Wire, Spring Wire, Rivet Wire, &c., &c.
GALVANIZED WIRE CLOTHES LINES.

IRON AND STEEL WIRE ROPE
For Hoisting, Running & Standing Ropes, Ferries, &c.
CONSTANTLY KEPT ON HAND.
Address, HAZARD MFG. CO., Wilkesbarre, Luzerne Co., Pa.

J. LLOYD HAIGH,
MANUFACTURER OF
Cast Steel, Bessemer Steel & Iron Wire
AND
WIRE ROPE
OF EVERY DESCRIPTION.
WIRE ROPE FOR *Mines, Elevators, Inclined Planes, Derricks, Stays, Ship Rigging Sash Cord,* GALVANIZED WIRE CLOTHES LINES
SUSPENSION BRIDGE CABLES.
WIRE.—*Bright, Coppered, Annealed, Tinned, Rivet, Spring, Machinery, Chain Buckle, &c.*
Also Fence and Vineyard Wire.
Galvanized Steel Barb FENCING WIRE, Plain and Twisted, and Staples.
Galvanized Telegraph Wire, Patent Tempered Cast Steel Furniture Springs.
WORKS—South Brooklyn. OFFICES: 81 John St., New York. 164 Lake St., Chicago, Ill.

J. WOOL GRISWOLD,
Manufacturer of
WIRE,
TROY, N. Y.

COLUMBIA BICYCLE.

One can outdo the best horse, 100 miles in 7 hours, 1404 miles in 6 days. Send 3-cent stamp for price list and 24 page catalogue with full information.
THE POPE MFG. CO.
65 Summer St., Boston.
Agents wanted in every city who will open bicycle schools.



O. LINDEMANN & CO.
Manufacturers of
Japanned, Brass and Tin-Plated
BIRD CAGES.

☞ Being the inventors and patentees of BRIGHT METAL CAGES, constructed without solder, we are enabled to sell our Brass and Tin-Plated Cages cheaper than any other manufacturers.

254 Pearl St.,
NEW YORK.

CARY & MOEN,
Manufacturers of
STEEL WIRE for all purposes and STEEL SPRINGS of every description.



Market Steel Wire, Crinoline Wire, tempered and covered.
Also Patent Tempered Steel Furniture Springs, constantly on hand.
234, 236 and 238 West 29th Street, - - - - - NEW YORK.

TRAVELING
AND
JIB CRANES,
WITH
WESTON'S PATENT IMPROVEMENTS,

Of any desired capacities, from 1 ton to 50 tons, arranged for operation by hand or by power.

Absolute safety to person and load a special feature of all our work. Our improvements enable us to construct Cranes which possess greater efficiency, simplicity and convenience than any machines of this class heretofore made.

Plans and Estimates Submitted.

CORRESPONDENCE SOLICITED.

ADDRESS,
YALE LOCK MFG. CO.,
Office and Works, STAMFORD, CONN.

New York Salesroom,
53 CHAMBERS STREET.

WIRE RAILING
AND
Ornamental Wire Works.
DUFUR & CO.,
No. 36 North Howard St., Baltimore.
Manufacture WIRE RAILING for Cemeteries, Balconies, &c.; Sieves, Fenders, Cages, Sand and Coal Screens, Woven Wire, Iron Bedsteads, Chairs, Settees, &c.

Romer & Co.
Established 1837.



Manufacturers of Patent Scandinavian or Jail Locks. Brass Pad Locks for Railroads and Switches. Also Patent Stationary R. R. Car Door Locks. Patent Piano and Sewing Machine Locks.
141 to 145 Railroad Avenue, NEWARK, N. J.
Illustrated Catalogue sent to the trade on application.

I. SCHOENBERG, Pres. S. BLONDHEIM, Sec'y.
The Schoenberg Metal Mfg. Co.,
Manufacturers of and Dealers in
SOLDER, TYPE,
Stereotype, Electrotype and Babbitt Metals.
Importers of Block Tin, Antimony, &c. Refiners of Lead, Spelter, &c. Highest price paid for Old Metals and all kinds of Dross. 511 and 513 East 19th Street, between Avenues A & B, New York.

S. L. SAMUEL.
P. O. Box 1300. 57 Cedar St., N. Y.
Manufacturers' EXPORT Agent for
Hardware, Brassware, Glassware,
WOODENWARE,
Kerosene Goods, Burners, Wicks, Oil.
Late Agent for WM. H. SAMUEL & Co.
Orders sent direct will save the purchaser all intermediate profits.

R. SELLEW & CO.
Dealer in **METALS,**
Tin Plate, Sheet Iron, Copper, &c.
SAINT LOUIS.

MONITOR TIN PLATE WORKS.
54 Cliff Street, New York,
Manufacturers of
LARGE TINNED SHEETS for DAIRY and OTHER PURPOSES, COTTON CANS,
and all special sizes, shapes, gauges and qualities, from 10 to 40 inches wide, 10 to 96 inches long.
Guaranteed Equal in Every Respect to Best Imported.

AMERICAN TOOL CO.,
116 Chambers Street, New York.

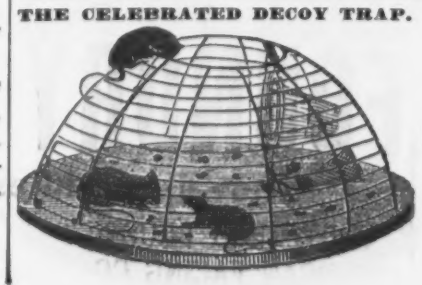
MANUFACTURERS OF
TOOL CHESTS



Of every description, adapted for home and export trade.
Send for Illustrated Catalogue.

MECHANICS' TOOLS & HARDWARE SPECIALTIES.

THE CELEBRATED DECOY TRAP.



E. OLIVER,
No. 106 and 108 Beekman St., N. Y.
MANUFACTURER OF
Every description of Wire Cloth, Wire Window Guards, Bank and Office Railing, Moulders' Riddles, Decoy Rat and Mouse Traps, Wood and Metallic Flour and Meal Sieves, Dish Covers, &c.,
At the Lowest Prices.

Some Physical Changes in Iron and Steel at High Temperatures.

Mr. Thomas Wrightson, of Stockton-on-Tees, read before the Liverpool meeting of the Iron and Steel Institute a paper from which we take the following data on some physical changes occurring in iron and steel at high temperatures, his researches embracing: 1. The changes in wrought and cast iron when subjected to repeated heatings and coolings. 2. The effect upon bars and rings when different parts are cooled at different rates. 3. The changes occurring in molten iron when passing from the solid to the liquid state, and *vice versa*. The reason that so little has been done hitherto in the accurate observation of the physical properties of iron is two-fold: First, the molecular changes of the metals is so slow at ordinary temperatures and under ordinary conditions of strain that trustworthy observations, which must of necessity have extended over long periods, are difficult to obtain; secondly, when the temperatures are high—at which times the greatest and most rapid molecular changes are occurring—the difficulties of observation are increased to such an extent that the results lack the scientific accuracy which characterizes the chemical methods of examining iron. Hence, probably, chemical analysis has been employed almost to the exclusion of physical methods. However, to take the first heading, the changes effected by repeated heating and cooling, we have only to point to a steam-boiler to see how important it is that we should understand these changes not only as they affect iron, using the term in its generic sense, but also as they affect the different qualities and various makes. In the case cited we have one side of the plates subjected to a fierce heat, while the other is at a comparatively moderate temperature approximating to that of the steam and water. Where a riveted seam occurs the conducting surfaces of the metal are thickened, and the results are not unfrequently seen in what are known as seam rips. Mr. Wrightson cut some strips from the plates of two long egg-ended boilers which had exploded by ripping at the seams, and found the iron had become brittle, was apparently crystalline in fracture, and had but small tensile strength. Strips taken further from the seam showed that in both cases the iron had been less injuriously affected. Chains are rendered brittle by the strains to which they are alternately subjected, and they are periodically annealed to avoid any danger from the change in the tenacity of the iron. Mr. Wrightson found that a similar treatment of the strips from the boiler plates restored the fibrous character of the iron, as well as its ductility and tensile strength.

The facts mentioned afford an excellent example of the importance of the physical effects produced by repeated changes of temperature. The change effected by one heating and cooling is so small that a cumulative test is the only method by which a really useful result can be obtained. If a wrought-iron bar is heated, expansion takes place; if the bar is then suddenly cooled in water, it contracts, and the amount of the contraction exceeds that of the previous expansion, so that the bar is now smaller than it was before being heated. If these operations are repeated, the contraction increases during many successive operations. Thus a bar 1⅛ inches square by 30.05 inches long, heated to a dull red and cooled in water, contracted, after first cooling, .04 inch; after fifteenth cooling, .68-inch or a percentage of 2.26 in 15 operations. That was common iron; the best gave the same degree of contraction for the first two or three operations, but on the 15th cooling was found to have contracted only .56-inch or 1.86 per cent. of its length. Similar bars heated to redness and allowed to cool in air do not exhibit any change in dimensions, but if they are raised to a white heat a slight contraction does occur. Some wrought-iron hoops welded up from bars of the same section as the iron employed in the previous experiments yielded almost identical results—the contraction progressing steadily during 25 coolings. Pieces of wrought plate, planed up into a nearly accurate rectangular form, were then tested, with the result that after cooling in water a reduction of specific gravity was discovered amounting to 1 per cent. after 50 coolings and 1.57 per cent. after 100, further heatings and coolings not appearing to effect any change. A reduction of the surface takes place after each heating and cooling, due to two causes—viz., scaling, which amount to .00057-inch reduction of thickness after each immersion in water; and a persistent contraction, which takes place vigorously after each immersion up to 50, and probably to a much greater number. Bulging is noticed in the case of plates, which thicken toward the center, while the edges are thinned. Professor Stokes has explained the bulgings; the scaling is well understood, but the contraction can be accounted for only on the supposition that a molecular change in the iron occurs when the red-hot iron is suddenly cooled. Cast-iron bars, on the contrary, whether cooled suddenly in water or gradually in air, expand slightly, while cast-copper rods exhibit no change when cooled in air, but expand slightly after being several times suddenly cooled in water. Some of the most valuable and interesting of Mr. Wrightson's experiments were made upon bars and rings partially immersed only when being cooled.

From the results recorded above, it would be imagined that if a thick hoop, or portion of a hoop, were cooled by partial immersion, the portion in the water would contract, while that allowed to cool in the air would exhibit no change. Such a conclusion, however, is entirely erroneous, for, when a hoop 18 inches in diameter, forged out of iron 3½ inches broad by ½ inch thick, was half immersed in water, it showed, after 20 successive heatings and coolings, that the water-cooled edge had increased 1-24 inch, or 2.14 per cent. in length, while the air-cooled half had contracted 7-9 inch, or 13.65 per cent., so that the hoop had become a section of a cone. To ascertain whether the form had anything to do with this curious result, a wrought-iron bar, 3½ inches deep by ½ inch thick by 28.4 inches long, was treated in a similar manner, when the dipped edge was found to elongate, while the upper edge, cooled in air, contracted, so much so that the originally straight bar became curved, the water-cooled edge becoming convex, while that in the air became concave. After the twelfth immersion the lower edge was found to have expanded 4.4 inches, while the upper had contracted 1.96 inches. An experiment was also made to test the effect of reversing the bar. A similar bar to that previously described, after five coolings, was curved so that the versed side of its air-cooled edge measured 1½ inches. The concave edge was then placed in the water, and five immersions brought the bar within an ⅛ inch of the straight, and the eleventh cooling threw the concavity on the other side of the bar. These experiments were subsequently repeated in a more elaborate manner with steel and wrought-iron hoops accurately turned and bored, and immersed to varying depths. The explanation was furnished by Col. Clark, R. E., some years ago, after similar experiments made at Woolwich. The immersed portion, being quickest cooled, is the stronger metal, and tends to pull in the upper part, which, besides, contracts as it slowly cools, so that the excess of contraction rests with the air-cooled portion. Col. Clark does not appear to have noticed the expansion of the water-cooled edge. These experiments are unquestionably of value, and the knowledge gained by them may be utilized in the arts; hence it would be advisable to issue the tables and the diagrams, together with the descriptive matter, in a separate form.

In making the experiments above noticed Mr. Wrightson's attention was naturally drawn to the changes occurring in cast iron when passing from the solid to the molten condition, and *vice versa*. It is well known that a piece of cold cast iron will float upon a bath of molten cast iron, and much has been written to account for the apparent anomaly that cast iron which has in cooling contracted about 1 per cent. from the original size of the mold in which it was cast, should, with a presumably higher specific gravity than the molten metal, float in the same. The ordinary way in which the experiment is performed is to take a small piece of cold iron and throw it into a ladle of molten metal. It sinks at first, and then rises buoyantly to the surface. The assumption is made that the sinking is due only to the momentum acquired in falling; but the fact is the cold iron sinks because it is heavier, and rises to the surface as it becomes heated and expands, the density being thus diminished. Mr. Wrightson had spheres cast 1, 2, 3, 4 and 5 inches in diameter, which were lowered, not thrown, into the the molten metal, and he devised an instrument which registered the amount of sinking and of flotation, below and above a line of equilibrium. The diagrams obtained with this instrument show that in every case the ball sinks when first lowered into the metal, the duration of the sinking period being, as a rule, longest with the smaller balls. The outside surface of a ball expanding only to a small degree affects the volume more in proportion as its diameter is larger (the surface varying as the square and the volume as the cube of the diameter). Hence, as a rule, five or six seconds may be sufficient to expand a 5-inch ball to the floating point, while a 2-inch ball would require a much longer time before it would float. Thus the index, at the moment the ball enters the metal, crosses the line of equilibrium and sinks below it; then it rises gradually until it attains its maximum above the line, and then falls again as the ball melts until it reaches the line, the fork and spring holding the ball being adjusted to remain in equilibrium. It may be reasonably assumed that the diagrams, read backward, convey a correct impression of the changes going on when molten iron is cooling to the solid. The mold is usually made about one per cent. larger than the casting is required to be, and the metal when poured in is always supposed to expand; hence the sharpness of the impressions. This expansion is marked on the diagrams by the quick rise of the line between the molten point and the point of greatest volume. Mr. Wrightson says that, in carefully observing the cooling of a casting, it will be noticed that a considerable contraction takes place some minutes after the iron has partially set. A few minutes after the "git" is closed and congealed there is a sudden breaking open of the same, and a sponging out of the hot liquid metal from the interior, as though the internal part had suffered a sudden squeeze. This phenomenon is indicated by the sudden fall of the line on the diagram, and indicates in this case the passage from the plastic to the solid state.

Life of Rails on Illinois Railroads.—From the returns of a number of railroads in Illinois to the Railroad Commissioners of the State, it appears that the following was the average life of rails on the various railways:

Names of Roads.	Rails. Iron.	Steel.
Carbondale and Shawneetown	7	....
Chicago and Alton	8	15
Chicago and Eastern Illinois	5	....
Chicago and Iowa	7	....
Chicago and Pacific	6	....
Cincinnati, Lafayette and Chicago	6	....
Decatur, Mattoon and Southern	10	....
Grand Tower and Carbondale	12	....
Illinois Midland	7	....
Illinois and St. Louis	10	....
Indiana, Bloomington & Western	4	....
Indianapolis and St. Louis	5	....
Lafayette, Bloomington and Miss	10	....
Lake Shore and Michigan Southern	5	....
Michigan Central	3	9
Mineral Point	10	....
Pittsburgh, Cincinnati and St. Louis	7	....
Pittsburgh, Ft. Wayne and Chicago	3	....
St. Louis, Alton and Terre Haute	10	....
St. Louis and Southeastern	7	20
Toledo, Peoria and Warsaw	8.5	....
Wabash Railway	7.5	....
Western Union	10	....
Average	7.3	14.66

The Delaware and Hudson Canal Company and the Delaware, Lackawanna and Western Railroad Company, have increased the wages of their miners 10 per cent.

Iron.

NEW YORK.

OGDEN & WALLACE,
Successors to GAM'L G. SMITH & CO.,
IRON & STEEL,
85 87, 89 & 91 ELM ST., N. Y.
COMMON AND REFINED BAR IRON.
SHEET AND PLATE IRON,
HOOP, BAND AND SCROLL IRON,
Rod and Horse Shoe Iron,
Angle and T Iron,
Swedes and Norway Iron, Norway Nail Rods.
Iron of all sizes and shapes made to order.

PIERSON & CO.,
24 Broadway, New York City.
Iron & Steel.
COMMON & REFINED IRON,
Hoops, Rods, Scrolls, Bands, Ovals,
Horse Shoe, Nail Rods,
Steel, &c.
Orders promptly filled from stock.

ABEEL BROTHERS,
Established 1765 by ABEEL & BYVANCK,
Iron Merchants,
190 South Street and 365 Water, N. Y.
ULSTER IRON
A full assortment of all sizes constantly on hand.
Refined Iron,
Horse-Shoe Iron,
Common Iron.
Band, Hoop and Scroll Iron.
Sheet Iron.
Norway Nail Rods.
Norway Shares.
Cast, Spring and Tire Steel, etc.

A. R. Whitney,
Manufacturer of and Dealer in
IRON,
50, 58 & 60 Hudson, 48, 50 & 52 Thomas, and 12, 14 & 16 Worth Sts., } NEW YORK.
Our specialty is in
Manufacturing Iron Used in the Construction of Fire-Proof Buildings, Bridges, &c.
Plans and estimates furnished, and contracts made for erecting Iron Structures of every description. Books containing cuts of all Iron made sent on application by mail.
Sample pieces at office. Please address
58 Hudson Street.

BORDEN & LOVELL,
Commission Merchants
70 & 71 West St.,
Wm. Borden, L. N. Lovell, — New York.
Agents for the sale of
Fall River Iron Co.'s Nails, Bands, Hoops & Rods.
AND
Borden Mining Company's Cumberland Coals.

WILLIAM H. WALLACE & CO.,
IRON MERCHANTS
Cor. Albany & Washington Sts.,
NEW YORK CITY.
WM. H. WALLACE. WM. BISPHAM.

DANIEL F. COONEY,
(Late of and Successor to Jas. H. Holdane & Co.)
88 Washington St., N. Y.
BOILER PLATES and SHEET IRON,
LAP WELDED BOILER FLUES,
Boiler Rivets, Angle & T Iron, Cut Nails & Spikes.
Agency for Pottstown Iron Co., Viaduct Iron Works, Lebanon Rolling Mills, Pine Iron Works, Laurel Iron Works, The Bergen Rolling Mills, at Jersey City.

CRAY ENAMEL WARE.
W. T. WELLS,
Sole Agent for FOXELL, JONES & CO., is now prepared to supply the wholesale trade only with Plain, Ground, Enameled and Tinned
HOLLOW WARE.
Gray Enamel Maslin Kettles and Stove Ware a specialty. This is the most durable enamel in the market.
Office and Warehouse 78 Beekman St., N. Y.

P. W. GALLAUDET,
Banker and Note Broker,
Nos. 3 and 5 Wall Street,
NEW YORK.
HARDWARE, METAL, IRON RUBBER, SHOE, PAPER AND PAPER-HANGINGS, LUMBER, COAL AND RAILROAD PAPER WANTED.
ADVANCES MADE ON BUSINESSS PAPER AND THER SECURITIES.

Geo. A. Boynton
BROKER IN IRON
70 WALL ST, N.Y.

Iron.

NEW YORK.

A. B. Warner & Son,
IRON MERCHANTS,
28 & 29 West and 52 Washington Sts.
BOILER PLATE,
Boiler Tubes, Angle, Tee & Girder Iron, Boiler and Tank Rivets.
Sole Agents for the celebrated
"Eureka," Pennocks,
"Wawasset," Lukens,
Brands of Iron. Also all descriptions of Plate, Sheet, and Gasometer Iron. Special attention to Locomotive Iron. Fire Box Iron a specialty.

ROME MERCHANT IRON MILLS,
ROME, N. Y.,
Manufacturers of the best grade of
Bar Iron, Bands and Fine Hoops.
Scrolls, Ovals, Half Ovals, Half Rounds, Hexagon and Horse Shoe Iron. Also from Charcoal Pig a superior quality of Iron branded J. G. All puddled balls reduced by hammer. Orders may be sent to the Mill or to J. O. CARPENTER, our Agent, at 59 John Street, New York.

MARSHALL LEFFERTS,
90 Beekman St., New York City,
MANUFACTURER AND DEALER.
Galvanized Sheet Iron,
1st and 2d Qualities.
Galvanized Wire, Telegraph and Fence; Galvanized Hoop and Band Iron, Galvanized Rod and Bar Iron, Galvanized Nails, Galvanized Chain, Galvanized Iron Pipe.
CORRUGATED SHEET IRON
For Roofing, &c., Galvanized, Plain or Painted.
Best Charcoal, Best Refined and Common
SHEET IRON.
Plate and Tank Iron,
C No. 1, C H No. 1, C H No. 1 Flange, Best Flange, Best Flange Fire Box, Circles.
BOILER IRON
Stamped and Guaranteed.
All descriptions of Iron Work Galvanized or Tinned to order.
Price list and quotations sent upon application.

JAMES WILLIAMSON & CO.,
SCOTCH AND AMERICAN
PIG IRON,
No. 69 Wall St., New York.

B. F. JUDSON,
Importer of and Dealer in
SCOTCH AND AMERICAN
Pig Iron,
Wrought & Cast Scrap Iron,
OLD METALS.
457 & 459 Water St., 233 & 235 South St., } NEW YORK.

ULSTER IRON WORKS,
90 Broadway, New York.
Tuckerman, Mulligan & Co

O. W. GRAVES & CO.,
METAL BROKERS,
Cor. Cliff and Beekman Sts., New York.
TIN PLATE, PIG TIN, IRON WIRE, SHEET IRON, BRASS and COPPER GOODS, &c.

Passaic Rolling Mill Co.,
PATERSON, N. J.
Iron Bridge Builders
And Manufacturers of
Beams, Channels, Angles,
TEES,
Merchant Iron, &c., &c.
New York Office, 138 Chambers Street.
WATTS COOKE, President.
W. O. FAYERWEATHER, Treasurer.

W. J. Carmichael,
DEALER IN
Iron & Steel Boiler Plate,
Lap Welded Boiler Tubes, &c., &c.
130 & 132 Cedar Street, New York.
Agent for Otis' celebrated Cast Steel Boiler Plates, The Coatesville Iron Co. and The Laurel Rolling Mills.

Iron.

NEW YORK.

John W. Quincy,
98 William Street, New York.
Anthracite & Charcoal Pig Irons,
Wrought Scrap, Cut Nails, Copper,
BLOCK TIN, LEAD, SPELTER, ANTIMONY, NICKEL, &c

HARRISON & GILLOON
IRON AND METAL DEALERS,
558, 560, 562 WATER ST., and 302, 304, 306 CHERRY ST.,
NEW YORK.
have on hand, and offer for sale, the following:
Scotch and American Pig Iron, Wrought, Cast and Machinery Scrap Iron, Car-Wheels, Axles and Heavy Wrought Iron; also old Copper, Composition, Brass, Lead, Pewter, Zinc, &c.

OXFORD IRON CO.,
(B. G. CLARKE, Receiver,)
Cut Nails
AND
SPIKES.
J. S. SCRANTON, Sales Agent,
81, 83 and 85 Washington Street,
NEW YORK.

BURDEN'S
HORSE SHOES.
"Burden Best"
Iron
Boiler Rivets.
Burden Iron Works, H. Burden & Sons,
Troy, N. Y.

EGLESTON BROS. & CO.,
166 South Street, 267 Front Street, } NEW YORK CITY.
BURDEN'S
H. B. & S.
AND
ULSTER BAR IRON.
All sizes and shapes in stock.
Also Best Grades of
Am. & Eng. Ref'd Iron, Common Iron, &c

W. S. MIDDLETON,
BUYER OF
IRON,
Railroad, Mining and Steamship Supplies,
Machinery, Hardware & Tools,
52 JOHN STREET,
Room 5. *NEW YORK.*

Houdlette & Ellis,
Manufacturers of and Dealers in
MERCHANT BAR IRON,
Homogeneous Steel and Iron Boiler Plates.
Sheet and Tank Iron. Boiler, Tank and Safe Rivets.
Best Lap-Welded Iron Boiler Tubes.
Wrought Iron Girder, Deck, and Channel Beams.
Angle, T and Grooved Iron.
Steel and Iron Forgings, Bessemer Steel Cut Nails.
Genuine and Standard Babbitt Metals,
Crescent Brand Journal Bearings.
19 to 31 Batterymarch Street, Boston.

Agency of
N. M. HÖGLUND'S SONS & CO., Stockholm.
Swedish & Norway Iron
of every description. Stock on hand at Boston, New York and Philadelphia. Importation orders a speciality.
GUSTAF LUNDBERG, 38 Kilby st., Boston.
ALBERT POTTS, Philadelphia Agent, 234 & 236 N. Front Street.

ROME IRON WORKS,
Manufacturers of
Brass, Gilding Metal, Copper and German Silver
(In Sheets, Rods, Tubing or Wire),
COPPER & BRASS RIVETS AND BURS.
Rome, New York.

Mill, Allegheny City, Pa.; Office, Cor. Water and Market Sts., Pittsburgh, Pa.
ANDREW KLOMAN, Pittsburgh, Pa.,
Manufacturer of
STEEL AND IRON STRUCTURAL MATERIAL,
Kloman Patent Universal Mill-Rolled Eye Bars.
LIGHT STEEL AND IRON RAILS.

Iron.

PITTSBURGH.

W. D. WOOD & CO.'S



PATENT
Planished Sheet Iron.
Patented March 14th, 1865; April 8th, 1873; Sept. 9th, 1873; Oct. 6th, 1874; Jan. 11, 1876.
Guaranteed fully equal in all respects to the
IMPORTED RUSSIA IRON,
and at a much less price.
FOR SALE,
by all the principal
METAL DEALERS
In the Large cities throughout
THE UNITED STATES.
And at their Office,
111 Water Street, PITTSBURGH, PA.

The U. S. Iron and Tin Plate Co.,
OF PITTSBURGH, PA.,
Manufacture to order
BEST REFINED CHARCOAL AND POLISHED SHEET IRON,
Taggers Iron and Bessemer Steel Plate,
in quality and size to suit the wants of consumers. Also Best Charcoal Terne Plates in Special Sizes, from 10x17 to 20x30
Orders solicited. Inquiries promptly answered.
Address P. O. Box 24, Pittsburgh, Pa.
Works at Demmler, Allegheny Co., Pa.
Eastern Sales Agents:
ELY & WILLIAMS, 1232 Market st., Phila. 114 John st., N. Y. 36 Oliver st., Boston.

C. KANE,
Dealer in
IRON and STEEL.
Old Rails, Wheels, Axles, Springs, Scrap, Turnings, &c.,
PIG IRON, BLOOMS AND BAR IRON.
Duquesne Way, near 6th Street,
PITTSBURGH.

Bonnell, Botsford & Co.,
Iron, Nails & Spikes.
YOUNGSTOWN, OHIO.

Connellsville Coke.
FRANCIS WISTER,
230 South Third Street, Philadelphia.
Best Coke for Furnace and Foundry Use.

Iron.

PITTSBURGH.

A. G. HATRY,
Commission Merchant.
Bar, Sheet, Tank, Boiler, Angle, T, and Railroad Iron,
And Railroad Equipment.
Nails & Spikes Steel & R. R. Supplies;
WINDOW GLASS, GAS PIPE & BORAX.
PITTSBURGH, PA.

JUNIATA



SNOW SHOES.
The only Snow Shoes in the market that absolutely prevent all balling and give universal satisfaction.
Improved Snow Shoe Shapes.
Standard Sizes.
⅜x7-16, 11-16x7-16, ¾x7-16, 13-16x7-16, ⅞x7-16, ⅞x1½ 15-16x3½, 1x3½, 1 1-16x3½, 1 1-8x3½.
STEEL TOE CALKS.
SHOENBERGER & CO., Pittsburgh, Pa.

Portsmouth Iron and Steel Co.,
Successors to
GAYLORD ROLLING MILL CO.,
Manufacturers of
Siemens-Martin (Open Hearth)
STEEL BOILER PLATE,
Agricultural and Machinery Steel and Steel Tire.
Also, Homogeneous Iron Boiler Plate and Rivets, Merchant Bar, Hoop and Sheet Iron, Wrought Spikes, Fish Bars and Bolts.
Office and Works:
PORTSMOUTH, OHIO.
J. C. LEWIS, Pres't and Gen'l Sup't. GEO. S. LEWIS, Sec'y and Treas.

BRADLEY, REIS & CO.,
NEW CASTLE, PA.,
Manufacturers of every description of
PLATE & SHEET IRON
OFFICE, at Works.

ZUG & CO.,
Pittsburgh, Pa.,
Manufacturers of
Wheeler's Iron & Steel Combination Shafting,
Under license of the Combination Trust Co., Philadelphia.
This Shafting is superior to any now on the market, and the attention of machinists is particularly called to it and a trial order solicited. Prices furnished on application.

LEECHBURG IRON WORKS.
KIRKPATRICK, BEALE & CO.
Manufacturers of all grades of
FINE SHEET IRONS,
(Refined, Cold Rolled, Show Card, Stamping, Tea Tray, Polished, Shovel.)
TIN AND TERNE PLATES, made with Natural Gas as fuel.
OFFICE, No. 116 Water St., Pittsburgh, Pa. *WORKS, Leechburg, Pa.*

Est. in 1840 by JOHN ROACH. **ÆTNA IRON CO.,** WM. J. FRYER, Jr Manager.
Manufacturers of every description of Wrought and Cast
ARCHITECTURAL IRON WORK FOR BUILDINGS.
86 to 108 Goerck Street, New York.

WROUGHT IRON.
Roofs. Stairs. Floors. Shutters and Doors, with various fastenings. Rolling Shutters. Window Sashes and Frames. Fire-Proof Ceilings and Partitions. Lathing. Sky-Lights. Floor-Lights. Book-Safe Doors. Fire-Escape Balconies and Ladders. Rolled and Riveted Beams and Girders. Bank-Vault Doors & Safes. Bridles, Truss Plates and Bolts, for Wood Beams. Anchors, Clamps and Ties for mason work. Framing, for Slate. Gratings, for Areas. Corrugated Sheet Iron galvanized or plain. Window Panels & Guards. Water Tanks. Platform Elevators for Stores. Etc., Etc., Etc.

CAST IRON.
Fronts for Buildings. Columns of every kind. Arch Girders, with tension rods—improved shape. Cast Iron Beams. Cornices. Capitals and Bases. Flue Rings. Ventilators. Illuminating Tiles, for Steps and Platforms. Roof Crestings & Finials. Verandahs. Balconies. Shutter Eyes. Turn-Buckles. Window Lintels and Sills. Lamp Posts. Tree Boxes. Chimney Caps. Coping. Leader Pipes. Gutter Spouts. Coal Covers. Walking Plates. Railings and Gates, for dwellings, offices and cemeteries. Improved Chairs, for theatres, with turn-up seats. Stable Fixtures, Mangers, Stall Guards, &c.

MOULDING SAND
Fire Sand and Clays.
FOUNDRY FACINGS
Shovels, Riddles, Brushes, &c.
WHITEHEAD BROS. AMERICAN FACING CO.
WM. WHITEHEAD, Treas., 517 W. 15th St. New York.

Iron.

PHILADELPHIA.

Siemens' Regenerative GAS FURNACE.

RICHMOND & POTTS,

119 S. Fourth St., PHILADELPHIA, PA.

Iron.

PHILADELPHIA.

HENRY LEVIS & CO., Manufacturers' Agents

For Iron and Steel Rails, Car Wheels, Boiler and Sheet Iron and General Railway Equipments.
Old Rails, Axles, and Wheels bought and sold.

261 S. 4th St., Philadelphia.

Iron.

Edward J. Etting,

IRON BROKER AND COMMISSION MERCHANT,
230 S. Third St., Philadelphia, Pa.

Pig, Bar and Railroad Iron.

OLD RAILS, SCRAP, &c.

Agent for the

Allentown Iron Co. and the Coleraine Furnaces.

STORAGE WHARF & YARD,
DELAWARE AVENUE ABOVE CALLOWHILL STREET, connected by track with r road.

Cash advances made on Iron.

Iron.

JUSTICE COX, Jr. CHARLES K. BARNS.

JUSTICE COX, JR. & CO.,

AGENTS FOR

Chickies, St. Charles, Montgomery and Keystone Foundry & Forge Pig Iron.

CATASAUQUA MFG. CO.'S

Bar, Angle, Skelp and Sheet Iron.

RAILROAD CAR AXLES.

NEW AND OLD RAILS.

No. 333 Walnut St., Philadelphia.

The Cambria Iron and Steel Works,

Having enjoyed for over TWENTY YEARS the reputation of producing the best quality of

RAILS,

have now an annual capacity of

100,000 Tons of Iron and Steel Rails, Splice Bars, &c.

ADDRESS,

CAMBRIA IRON COMPANY,

No. 218 South 4th Street, Philadelphia.

Or at the Works, *JOHNSTOWN, PA.*

Or LENOX SMITH, New York Selling Agent, *46 Pine St., N. Y.*

Chester Iron Company's BESSEMER ORES.

Blue Ore, Red (Foundry) Ore, and a limited amount of the celebrated Brotherton (Foundry) Ore. Prices will be given on application to

J. WESLEY PULLMAN,

407 Walnut St., Philadelphia.

D. W. R. READ. T. HORACE BROWN.

D. W. R. READ & CO.,

General Commission Merchants,

ORES, METALS, &c.

Spanish, Algerian and Domestic Ores of Iron, Manganese, &c.

205½ Walnut St., PHILADELPHIA.

PETER WRIGHT & SONS,

307 Walnut Street, Philadelphia,
52 Broadway, New York,
44 Second Street, Baltimore,

Importers of

German and English

SPIEGELEISEN,

Pig, Scrap,

NEW AND OLD RAILS,

And Iron Ore.

THE PHŒNIX IRON CO.,

410 Walnut Street, PHILADELPHIA.

Manufacturers of

CURVED, STRAIGHT AND HIPPED

Wrought Iron Roof Trusses, Beams, Girders & Joists,

and all kinds of Iron Framing used in the construction of Iron Proof Buildings.

DECK BEAMS, CHANNEL, ANGLE AND T BARS

curved to template, largely used in the construction of Iron Vessels.

PATENT WROUGHT IRON COLUMNS, WELDLESS EYE BARS,

For Top and Bottom Chords of Bridges.

Railroad Iron, Street Rails, Rail Joints and Wrought Iron Chairs.

REFINED BAR, SHAFTING, and every variety of SHAPE IRON made to Order.

Plans and Specifications furnished. Address,

DAVID REEVES, President.

J. J. MOHR,

Iron Commission Merchant,

No. 430 Walnut Street, Philadelphia.

Sole Agent for the Sheridan and Leesport Furnaces.

J. W. HOFFMAN & CO.,

Iron Merchants & Railway Equipments.

208 South Fourth St., Philadelphia.

Sole agents Glasgow Iron Co. and Pine Iron Works manufacturers of Muck Bar and all grades of Plate Iron. Celebrated "Glasgow" and "Pine" brands for fire boxes and difficult flanging. Pig and Bar Iron, Rails and all shapes in Iron. Quotations given on Bridge and Building Specifications.

LONGHORNE WISTER. RODMAN WISTER.

L. & R. WISTER,

Brokers and Commission Merchants in Iron, Steel, &c.

Office, *No. 323 Walnut St., Philadelphia.*

A. PURVES & SON,

Corner South & Penn Streets, Phila.,

Dealers in

Scrap Iron & Metals, Machinery, Tools, Shafting & Pulleys, Steam Engines, Pumps & Boilers, Copper, Brass, Tin, Babbit Metals, Foundry Facings. Best Quality Ingot Brass.

Cash paid for all kinds of Metals and Tools.

ALAN WOOD & CO.,

MANUFACTURERS OF

Patent Planished, Galvanized, Common, Best Refined, Cleaned and Charcoal Bloom

PLATE & SHEET IRON,

No. 519 Arch St., Philadelphia, Pa.

Orders solicited especially for Corrugated, Gasholder, Pan and Elbow, Water Pipe, Smoke Stack, Last, Stamping, Ferrule, Locomotive Headlight and Jacket Iron.



LOCOMOTIVE AND CAR WHEEL TIRES,

Manufactured from the celebrated OTIS STEEL.

BRAND

STANDARD.

Quality and efficiency fully guaranteed. Prices as low as any of the same quality. We manufacture Heavy and Light Forgings, Driving and Car Axles, Crank Pins, Piston Rods, &c.

Works at Lewistown, Pa.

Office, 220 S. 4th St., Philadelphia, Pa.

The Iron-Masters' LABORATORY.

Exclusively for the

Analysis of Ores of Iron, Pig and Manufactured Iron, Steels, Limestone, Clays, Slags and Coal for Practical Metallurgical Purposes.

No. 339 Walnut St., Philadelphia.

J. BLODGET BRITTON.

This laboratory was established in 1866, at the instance of a number of practical Iron Masters, expressly to afford prompt and reliable information upon the chemical composition of the substances above mentioned, for smelting and refining purposes. The object being to make it at once a convenient, practically useful, and comparatively inexpensive adjunct to the Furnace, Forge and Rolling Mill.

CHARGES TO IRON WORKS.

For determining the per cent. of Pure Iron in an ordinary Ore	$4.00
For the per cent. of Pure Iron, Sulphur and Phosphorus in do	12.50
For each additional constituent of usual occurrence	1.50
For those of unusual occurrence or difficult to determine, the charge must necessarily depend upon circumstances.	
For determining the per cent. of Sulphur or Phosphorus in Iron or Steel	7.00
For each additional constituent of usual occurrence	5.00
For the per cent. of Carbonate of Lime, and insoluble Silicious Matter in a Limestone	10.00
or each additional constituent	2.00
or the per cent. of Water, Volatile Combustible Matter, fixed Carbon, and Ash in Coal	12.50

For determining the constituents of a Clay, Slag, Coke, or of an Ash in Coal the charges will correspond with those for the constituents of an ore.

For a written opinion or letter of instruction the charge must necessarily depend upon circumstances.

Printed instructions for obtaining proper average samples for analysis furnished upon application.

NAILS

JAS. ROWLAND & CO.,

Kensington Iron, Steel & Nail Works,

920 North Delaware Ave., - - PHILADELPHIA,

Manufacturers of the

Anvil Brand Refined Merchant Bar Iron.

Also, the James Rowland & Co. Kensington Nails, cut from their Refined Anvil stock. Also, Plow and Cultivator Steel, Rounds, Squares, Flats, Bands and Hoop Iron.

Correspondence with Dealers solicited.

PENCOYD IRON WORKS.

A. & P. ROBERTS & CO.,

Manufacturers of

CAR AXLES.

BAR, ANGLE, TEE AND CHANNEL IRON.

Office, No. 265 S. Fourth St., Philadelphia. Agents for the sale of Glamorgan Pig Iron.



CORRUGATED AND CRIMPED IRON ROOFING & SIDING,

Iron Buildings, Roofs Shutters, Doors, Cornices, Skylights, Bridges, &c.



MOSELEY IRON BRIDGE AND ROOF CO.

5 Dey Street, New York.

PHOSPHOR-BRONZE



Bearings. Pump Rods and Spring Wire.

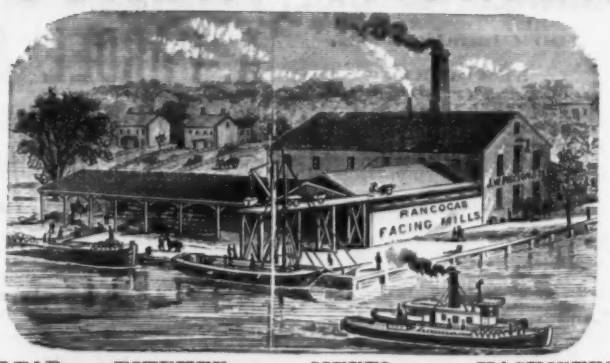
"Phosphor-Bronze."

Apply to

The Phosphor-Bronze Smelting Co., Limited,
2038 Washington Avenue, Philadelphia.

FOUNDRY FACINGS.

MANUFACTURERS' FOUNDRY SUPPLIES.



MOULDING SAND

GERMAN LEAD,	BITUMEN,	SIEVES,	MACHINERY SAND,
AMERICAN LEAD,	ANTHRACITE,	SHOVELS,	BRASS "
GRAPHITE,	CHARCOAL,	BRUSHES,	CHANDELIER "
PLUMBAGO,	MINERAL,	CRUCIBLES,	STOVE PLATE "

J. W. PAXSON & CO. OFFICE & STOREROOMS, 514, 516 and 518 Beach St., Philadelphia, Pa.

J. F. BAILEY & CO.,

216 South 4th St., Philadelphia. 52 Wall St., (Room 8) New York.

Selling Agents

ATKINS BRO'S—BEAMS, CHANNELS, RAILS, &c.

A. & P. Roberts & Co.—Car Axles, Plates, Channels, Tee, Angle and Bar Iron.

Philadelphia Agents Central Iron Works, Harrisburg, Pa.—Boiler, Ship and Bridge Plates.

WILLIAM McILVAIN & SONS—Boiler, Ship and Bridge Plates.

BERWICK R. M. BARS AND SHAPE IRON.

Advances on Consignments of Old Material and sales promptly made.

ALLENTOWN ROLLING MILL COMPANY,

Manufacturers of

Rails, Bars, Axles, Shafting, Fish Bars (Plain and Angle), Spikes, Rivets, Bolts and Nuts, &c. Bridges and Turn Tables.

General Office, 303 Walnut St., Philadelphia. Works at Allentown, Pa.

JAMES C. BOOTH. THOMAS H. GARRETT. ANDREW A. BLAIR.

BOOTH, GARRETT & BLAIR,

Analytical and Consulting Chemists,

919 and 921 Chant St. (10th St. above Chestnut St.), PHILADELPHIA, PA.

Established in 1836.

Analyses of Ores, Waters, Metals and Alloys of all kinds. A special department for the

ANALYSIS OF IRON AND STEEL,

fitted with all the apparatus and appliances for the rapid and accurate analysis of Iron, Steel, Iron Ores, Slags, Limestones, Coals, Clays, Fire Sands, &c. All analyses made by the members of the firm. Price lists on application.

"Climax" Reversible Ice Creeper.



"A" represents the Creeper in position ready for use. "B" shows the Creeper thrown back entirely out of the way when not in use, or walking in doors.

PATENTED APRIL 20, 1878.

A simple and sure prevention against falling on icy pavements. Easily adjusted to the boot or shoe.

For prices and terms to the Trade, apply to the manufacturers.

CHILDS, GROFF & CO.,

CLEVELAND, O.

FOR SALE BY

BIDDLE HARDWARE CO., Philadelphia.
PECK & SNYDER, New York.
SMITH, COVERT & CO., Albany.
J. P. PHINNEY & CO., Boston.
PRATT & CO., Buffalo.
EDWIN HUNT'S SONS, Chicago.
HAMILTON & MATHEWS, Rochester, N. Y.

Census Taking.

Mr. Frederick L. Jenkins has compiled the following interesting facts respecting census taking:

The term census is of old Roman origin, a group of the many functions performed by the high officer called censor having received the name census. In modern acceptation it is "an official enumeration of persons, their property generally, with such facts as tend to show their moral, social, physical and industrial condition." In the Pentateuch, the enumeration of the people is enjoined, and the most ancient statistical record of the kind is that of Moses in the wilderness. There is record of a Chinese census made by command of the Emperor Fee, 2042 B. C.; and of one in Japan under the Mikado Sujun in the last century before Christ. Under the constitution of Solon the citizens of Athens were divided and registered in four classes, according to the amount of their taxable property or income.

The Roman census originated under Servius Tullius, the sixth King of Rome, in the distribution of citizens into classes, in a most solemn manner on the Campus Martius, where every citizen had to appear, and to declare upon oath his name and dwelling, the number and age of his children, and the value of his property, under penalty of having his goods confiscated, and of being scourged and sold for a slave. The whole population was divided into six classes, based upon property qualifications; improvements were made under Augustus.

In the sixteenth century came into vogue the practice of keeping church registers of births, marriages and deaths, out of which grew the modern systems of recording the movements of the population. Peter the Great, in 1719, had a census taken of the male population for purposes of conscription, additions being made until 1802, when a "Central Bureau of Statistics" was organized, which was reorganized in 1852. From 1858-67 the Russian census grew to include legal population, information with reference to sexes, number of houses in towns, churches, chapels, institutions, manufacturing establishments, &c.

In Prussia, census-taking dates back to Frederick William I, and was improved under Frederick II. The enumeration embraces mechanics, medicine, religion, &c., and is made by civil officers on one day in December. The new German Empire, on December 1, 1871, took a census for the first time. The German States, for the most part, take a census triennially. Austria's census was first taken in 1734, and until 1857 was used entirely for military purposes. It is taken every three years.

The science of statistics has been more cultivated in Sweden than in any other country. The practice dates back to 1686, and has been carried to a high state of perfection. In Turkey the census is taken for conscription. The first taken in France was in 1700; it is now taken at quinquennial periods, Denmark being the only other country that takes its census every five years. The United states, Great Britain and Ireland, Holland, Belgium, Switzerland, Portugal, Sweden and Norway, on the other hand, do the work every 10 years. By the statute of 1855, this State takes a census every five years.

The origin of the American census may be traced to the colonial period, when the British Board of Trade caused enumerations to be made for commercial purposes. The census of the United States presents the unusual fact of being ordained by the constitution of the government, and really at the very birth of the government itself in 1790. It was then decided to take a census every 10 years as a political necessity. General James A. Garfield presented, in 1870, a bill to take from the control of marshals the collecting of census returns, and provisions were made to meet the requirements of science; but the bill was defeated by the Senate. The ninth census was then taken, under act of 1850, by 6572 assistant marshals, supervised by 61 marshals of the United States Courts, at a cost of $3,360,884. General Walker is considered to have made it (ninth census) the most complete in detail and accuracy that has ever been accomplished.

The present law, passed by the Forty-fifth Congress, allows $3,000,000, and has some excellent provisions. Supervisors are to be appointed for divisions, they appointing enumerators of sub-divisions, who are to be selected solely with reference to their fitness for these duties, and without reference to political or party affiliations. Under the old law subdivisions were limited to 20,000 inhabitants, while by the present law they are limited to 4000. By the old law the time from June 1 to November 1 was allowed for enumeration, while under the present statute it is required to be done in June, and in cities of more than 10,000 inhabitants in the two weeks from the first Monday in June. Schoolmasters have largely been found in England among the best qualified enumerators. It is proposed here to employ local officers and physicians, as it is thought they would make excellent enumerators. The decennial census is taken in Great Britain and Ireland in the months of March and April for climatic reasons.

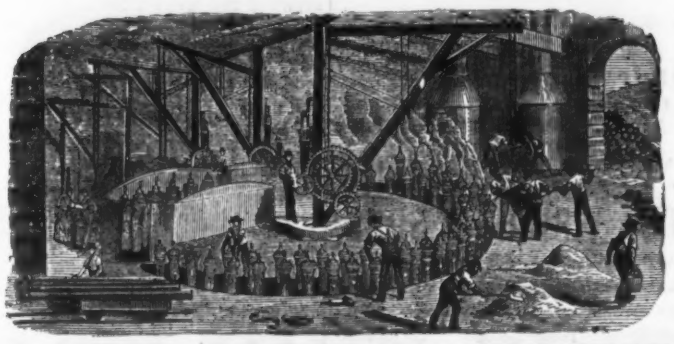
It has been remarked by eminent authority on this subject that in Ireland the greatest progress has been made. The first census was taken in 1811, but was not considered trustworthy. An English report says: "Prior to 1841 the Irish enumerators were persons taken from the general community. In the years 1841-'51-'61-'71, the census was taken by the constabulary and police under the control of the officers of these forces; their knowledge rendered them particularly well suited for this undertaking, and their position throughout has afforded us a sufficient staff of efficient enumerators, over whom the government continues to exercise control. They are, we have reason to believe, personally acquainted with every house in their respective districts. Five thousand and ninety-six men belonging to the constabulary, 15 coast guards and 173 of the Dublin metropolitan police were employed as enumerators." Dr. Jarvis, who is considered the highest authority on the subject, says that the Irish census of 1841-'51-'61, taken by the constabulary police, is among the best in the world.

In view of these facts, would it not be

McNEALS & ARCHER,

BURLINGTON, N. J.

Flange Pipes.



General Foundry Work.

CAST IRON PIPES

FOR WATER AND GAS.

ESTABLISHED IN 1845.

SINGER, NIMICK & CO.,

PITTSBURGH, PA.

MANUFACTURERS OF ALL KINDS OF

HAMMERED AND ROLLED

STEEL,

Warranted Equal to any Produced.

BEST REFINED TOOL CAST STEEL

For Edge and Turning Tools, Taps, Dies, Drills, Punches, Shear-Knives, Cold-Chisels and Machinists' Tools generally.

SAW PLATES

For Circular, Mulay, Mill, Gang, Drag, Pit and Cross-Cut Saws.

Sheet Steel

For Springs, Billet Web and Hand Saws, Shovels, Cotton Gin Saws, Stamping Cold, &c., &c.

SIEMENS-MARTIN (Open-Hearth) PLATE STEEL

For Boilers, Fire-Boxes, Smoke Stacks, Tanks, &c.

☞ All our Plate and Sheet Steel being rolled by a Patented Improvement is unequaled for surface finish and exactness of gauge.

ROUND MACHINERY CAST STEEL

For Shafting, Spindles, Rollers, &c., &c.

File, Fork, Hoe, Rake, R. R. Frog, Toe-Calk, Sleigh-Shoe and Tire Steel, &c.

Cast and German Spring and Plow Steel.

"Iron Center" Cast Plow Steel.
"Soft Steel Center" Cast Plow Steel.
"Solid Soft Center" Cast Plow Steel.

Finished Rolling Plow Coulters with Patent Screw Hubs attached.
Agricultural Steel cut to any pattern desired.

Steel Forgings made to order.

Represented at 59 BEEKMAN ST., NEW YORK, by

HOGAN & BURROWS, Gen'l Agents for Eastern and New England States.

MIDVALE STEEL WORKS,

CRUCIBLE AND OPEN HEARTH STEEL.

TIRES AND AXLES

OF EVERY DESCRIPTION.



TOOL, MACHINERY AND SPRING STEEL CASTINGS AND FORGINGS.

WORKS AND OFFICE: Nicetown, Philadelphia, Pa.

WAREHOUSE: 12 N. 5th St., Philadelphia, Pa.

ESTABLISHED 1847.

A. WHITNEY & SONS,

PHILADELPHIA,

CHILLED RAILROAD WHEELS

For every kind of service, including *Street, Mine and Lumber Tramways.* Wheels furnished in rough bored or on axles. Chilled castings made to order.

PENNSYLVANIA STEEL COMPANY,

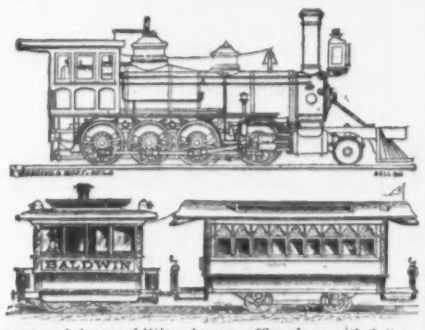
Steel Rails, Frogs, Crossings & Switches.

Forgings for Piston Rods, Guide Bars, Wrist Pins and Machinery Purposes.

Works at Baldwin Station, Pennsylvania Railroad, near Harrisburg, Pa.

Address all orders to

PENNSYLVANIA STEEL COMPANY, 208 South Fourth Street, Philadelphia.



BALDWIN LOCOMOTIVE WORKS,

BURNHAM, PARRY, WILLIAMS & CO., Proprietors,

Philadelphia, Pa., U. S. A.,

Manufacturers of

LOCOMOTIVE ENGINES

of every Description.

Catalogues, photographs and estimates furnished on application of customers.

NOISELESS STEAM MOTORS,

For city and suburban Railways.

These machines are nearly noiseless in operation; show no smoke with the use of anthracite coal or coke as fuel, and show no steam whatever under ordinary conditions of service. They can be run at two or three times the speed of horse cars and draw additional cars. Circulars with full particulars supplied.

CHROME STEEL

WAREHOUSE.

Address JOHN W. QUINCY, Manager, 98 William St., N. Y.

This Steel is made from Chromium and Iron, and is remarkable for Strength, Durability and Uniformity. Send for Circular, where the proof will show it does 25 to 75 per cent. more than other cast steel. It is adapted to all kinds of work where cast steel is used. Chrome Steel Castings from 25 to 500 lbs. to order.

Southern Advertisements.

ROANE IRON COMPANY,

Manufacturers of and Dealers in

Pig and Railroad Iron.

CHATTANOOGA, - - - - - TENN.

T. J. BROWN,

Rockwood, Tenn.

Miner and Contractor of Fossiliferous Ores.

A superior article delivered at low figures at any furnace within the district or at any point on the Ohio River. Refer to Roane Iron Co., Chattanooga Iron Co., or S. B. Lowe, Chattanooga.

S. B. LOWE,

Pig Iron, Storage & Commission.

Dealer in Charcoal and Coke Pig Iron for Foundry, Forge or Car Wheel purposes.

Chattanooga, Tenn.

LIGHT GRAY IRON CASTINGS

MADE A SPECIALTY BY

TAYLOR & BOGGIS,

65 to 73 Central Way,

CLEVELAND, OHIO.

Having extensive machine shop connected with foundry, we are enabled to fit up all kinds of light Hardware or patented articles. Correspondence solicited.

IRON AND STEEL DROP FORGINGS

All shapes, small and large, including

Gun, Pistol, Wrench Bars, &c. Also, Die Sinking. Manufacturers also of Bricklayers', Moulders' and Plasterers' Tools, Saddlers' Round and Head Knives.

WILLIAM ROSE & BROS.,

36th & Filbert Sts., West Philadelphia.

RICHARD P. PIM, Wilmington, Delaware,

MANUFACTURER OF

REFINED AIR FURNACE MALLEABLE IRON,

IMPROVED PROCESS,

And LIGHT GRAY IRON CASTINGS.

Castings of Best Quality made to order at short notice.

BRITTON IRON AND STEEL CO.,

MANUFACTURERS OF

BOILER, TANK AND BRIDGE PLATES,

Galvanized and Black Sheet Iron.

Foot of Wasson Street CLEVELAND, OHIO.



J. M. KING & CO.,

WATERFORD, N. Y.,

Manufacturers of the BUTTONS PATENT

"WIRE CUTTER AND PLIER COMBINED."

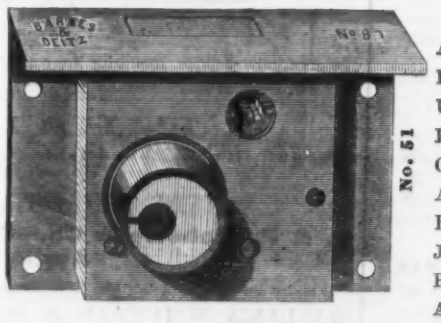
Specially Adapted for Use on Wire Fence.

Also Manufacturers of

Blacksmith and Machinists' Stocks and Dies, Plug and Taper Taps, Hand, Nut and Screw Taps, Pipe Taps and Reamers.

Price List on application. Established by DANIEL B. KING, 1829.





FERNALD & SISE,

100 Chambers St.,

NEW YORK,

REPRESENT

A. E. Deitz.
Penn. Hardware Company,
Underhill Edge Tool Company,
Roy & Co.,
G. M. Hotchkiss & Co.,
Auburn Tool Company,
Humphreysville Manufacturing Co.,
J. F. Wollensak,
Pittsfield Tack Company,
And others.



SILVER & DEMING MFG. CO.,

SALEM, OHIO,

MANUFACTURERS OF

THE SILVER & DEMING FEED CUTTER.

Seven sizes for Hand and Power. The most popular Feed Cutter in America.

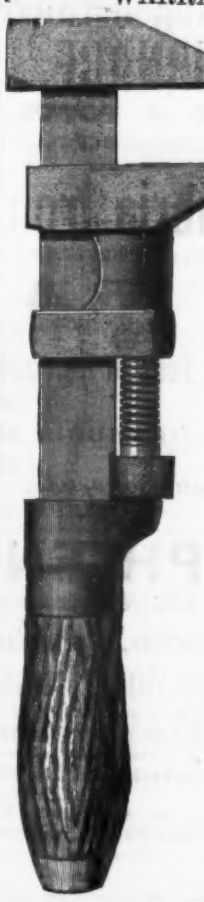
Send for prices and discounts.

TRADE

STANDARD GIRARD WRENCH.

MARK.

WARRANTED.



FOR **STRENGTH** AND **Durability** IT HAS NO SUPERIOR.

GUARANTEED IN EVERY RESPECT.

Wrought Bar, Head and Screw.

Owing to the *increased demand* for these justly Popular Wrenches, we are now manufacturing more than any other establishment in the world.

Our Wrench having been imitated by other manufacturers, we have adopted the above Trade Mark, and will hereafter stamp all our goods.

SEND FOR TERMS and PRICES.

GIRARD WRENCH MFG. CO., Girard, Pa.

A. Garrison. J. H. Ricketson. Wm. Holmes

PITTSBURGH FOUNDRY.

A. GARRISON & CO.,

Manufacturers of

Chilled Sand and Patent Homogeneous Steel

ROLLS,

Both Solid and Hollow,

Ore and Clay Pulverizers, Rotary Squeezers, Haskin's Patent Double Spiral Pinions, and Rolling Mill Castings of every description.

OFFICE, 6 Wood St., - - - PITTSBURGH.

Bridgewater Iron Co.,

Bridgewater, Mass.,

Manufacturers of

SEAMLESS DRAWN COPPER AND BRASS TUBES,

TACK PLATES,

Forgings of every description.

Bridgewater Iron Co.'s

HORSE NAILS.

PRICE LIST.

Nos.	5	6	7	8	9	10
Per lb.	26¢	23¢	21¢	20¢	19¢	18¢

Liberal discounts to the Trade.

73 Pearl Street, New York.

28 Broad Street, Boston.

Coal.

A. PARDEE, Hazelton, Pa. J. G. FELL, Phila.

A. PARDEE & CO.

303 Walnut St.,

PHILADELPHIA,

No. 111 Broadway, New York.

MINERS AND SHIPPERS OF

Lehigh Coals.

The following superior and well-known Lehigh Coals are mined by ourselves and firms connected with us, viz.

A. Pardee & Co. { HAZLETON, CRANBERRY, SUGAR LOAF.

Pardee, Bro. & Co. LATTIMER.

Calvin Pardee & Co. HOLLYWOOD.

Pardee, Sons & Co. Mt. PLEASANT.

THE HOBOKEN COAL CO.,

Dealers in

SCRANTON, LEHIGH and other COALS.

Retail Yard on D. L. & W. Railroad, cor. Grove and 10th sts., Jersey City. Coal delivered direct from shutes to carts and wagons. Families and manufactories supplied with the best qualities of Coal at the lowest rates.

OFFICES: At yard cor. Grove and 10th sts.; cor. Bay st. and Newark av., Jersey City; Room 35, 111 Broadway, N. Y. General Office, Bank Building, cor. Newark and Hudson sts., Hoboken. P. O. Box 247, Hoboken.

MINERS' CANDLES.

Superior to any other Light for Mining Purposes. Manufactured by

JAMES BOYD'S SON,

Nos. 10 & 12 Franklin St., New York.

ASPHALTUM and all kinds of BLACK VARNISHES.

The Largest Pump Works in the World.
OVER 800 DIFFERENT STYLES.
PUMPS, STEAM PUMPS, ROTARY PUMPS, CENTRIFUGAL PUMPS, PISTON PUMPS,
for Tanners, Paper Mills, Fire Purposes, suitable for all situations imaginable.

Fig. 99½.

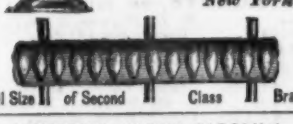


Also, HAND FIRE ENGINES.
Send for Catalogue. Address
RUMSEY & CO.,
Seneca Falls, N. Y., U. S. A.
BRANCH HOUSES: 93 Liberty St., New York, and 193 Lake St., Chicago, Ill.
L. M. RUMSEY & CO., Agents, 811 North Main Street, St. Louis, Mo. MARCUS C. HAWLEY & CO., San Francisco and Sacramento, Cal., General Agents for the Pacific Coast. JUSTUS SCHMIDT, Agent, Hamburg.

THE
Gilbert & Bennett Mfg. Co.,
GEORGETOWN, CONN.,
MANUFACTURERS OF
IRON WIRE, SIEVES AND WIRE CLOTH,
Power Loom Painted Screen Wire Cloth,
GILBERT'S RIVAL ASH SIEVE,
Galvanized Twist Wire Netting,
THE UNION METALLIC CLOTHES LINE WIRE,
Warehouse, - 42 Cliff St., New York.



John Maxheimer,
Manufacturer of
Patented
Japanned, Tinned Wire,
First and Second-Class Brass
Bird Cages.
Wires on both classes fastened without solder.
The cheapest and most saleable in market.
247 & 249 Pearl St., New York.



Full Size of Second Class Brass.

WATSON'S NORTH CAROLINA
TURPENTINE TOOLS.



Made of the best English steel and guaranteed. Any broken by fair usage exchanged.
MARCUS COTTON BATTING
for straining rosin is the best and cheapest in use.
Liberal discount.
Send for price list.
R. DUNDAS CHATER,
Sole Agent,
187 Pearl street, New York.

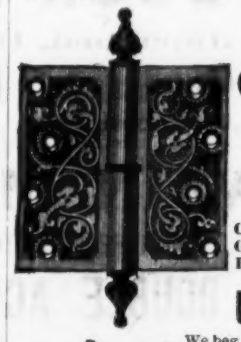


TACKLE BLOCKS.
Rope and Iron Strap of all kinds. Lignumvitæ Wood for Ten-Pin Balls.
Wm. H. McMillan & Bro.,
Office, 113 South Street, New York.
Factory, 39 to 40 Penn St., Brooklyn, E. D.

W. & B. DOUGLAS,
Middletown, Conn.,
The Oldest and Most Extensive Manufacturers of
PUMPS,
HYDRAULIC RAMS,
GARDEN ENGINES,
Yard Hydrants, Street Washers,
WIND-MILL PUMPS
AND OTHER
Hydraulic Machines
IN THE WORLD.
Awarded the GRAND MEDAL at WORLD'S EXPOSITION, Paris, France, 1878, being the highest award on Pumps, &c.; also the highest medals at Paris, 1867, Vienna, 1873, and Philadelphia, 1876, accompanied by the Report of Judges.
Descriptive Catalogues and Price Lists sent when requested.
BRANCH WAREHOUSES,
85 and 87 John St., N. Y.,
AND
197 Lake St., CHICAGO, Ill.

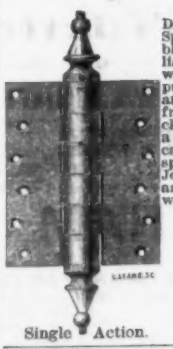


UNION MANUFACTURING COMPANY,
Manufacturers of all styles Plain and Ornamental Butts,
LOOSE PIN REVERSIBLE,
Cast Fast & Loose,
Drilled and Wire Jointed,
Japanned, Figured Enameled, Nickel Plated and Real Bronze Butts. Also a full line of
IRON & BRASS PUMPS.
Cistern, Well and Force Pumps, Yard Drive Well, Garden Engine and Steam Boiler Pumps, Hydraulic Rams, etc., and all with the most modern improvements.

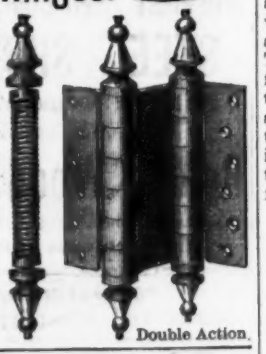




Union Spiral Spring Hinges.
We beg to call the attention of Architects, Builders, Dealers, and all interested parties, to our Spiral Spring Hinge, knowing it to be an effectual and durable one, neat in appearance, easy to put on, and not liable to get out of order. The springs are made from wire made expressly for us, and for this particular purpose, with the view of great elasticity, durability and power. They produce a continuous pressure from the point where the door is wide open until it is closed, and then hold it perfectly in position. It has a solid pintal in connection with short hollow ones, causing little or no friction, the whole power of the spring being exerted in swinging the door. It is Fast Joint, and can be used for either right or left hand, allowing the dealer to carry less stock, and the builder will never get the wrong hand.
Fine Castings a Specialty.
NEW BRITAIN, CONN.
Warehouses.
98 Chambers St., New York.
67 Kilby St., Boston (Pumps).
Heaton & Dencklа, 507 Commerce St., Phila. (Butts.)
Send for Illustrated Catalogue and Price List.



Single Action.



Double Action.



CUT TACKS, SHOE NAILS, WIRE NAILS,
Pat. Brads, Finishing Nails, Clout Nails, Trunk Nails, Hungarian Nails, Cigar-Box Nails, Basket Nails, 2d and 3d Fine Nails.
Carpet Tacks, Upholsterers' Tacks, Gimp and Lace Tacks, Brush Tacks, Copper and Brass Tacks,
BRASS AND IRON ESCUTCHEON PINS, &c., &c.,
MANUFACTURED BY
DUNBAR, HOBART & WHIDDEN, So. Abington Station, Mass.
New York Salesroom, 39 Warren St. Goods made to order from sample.
Particular attention given to orders for EXPORT.

CHAMPION
HOG RINGER
RINGS and HOLDER.
Only double Ring ever invented. The only Ring that will effectually keep Hogs from rooting. No sharp points in the nose.





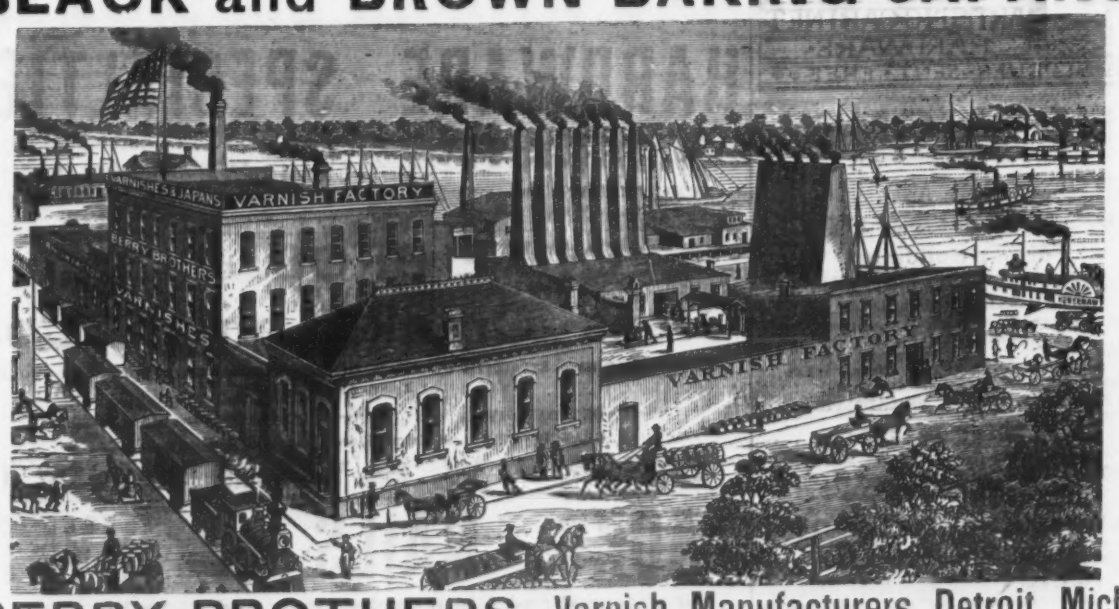
EAGLE BILL
CORN HUSKER
is the best Husker in the market. Farmers say it is the best. Use no other.



BROWN'S
HOG AND PIG
RINGER and RINGS.
Only single Ring in the market that closes on the outside of the nose. No sharp points in the nose to keep it sore.

Rings, 75c. Rings, 50c. 100. Holders, 75c. Huskers, 15c.
CHAMBERS, BERING & QUINLAN, Exclusive Manufacturers, Decatur, Ill.

ESTABLISHED 1858.
BLACK and BROWN BAKING JAPANS.
ASPHALTUM and all kinds of BLACK VARNISHES.



COACH, CAR and FURNITURE VARNISHES.
BERRY BROTHERS, Varnish Manufacturers, Detroit, Mich.
CHICAGO BRANCH, 236 Lake st.; ST. LOUIS, 503 & 305 North Third st., CINCINNATI, 72 Main st.; ROCHESTER, 116 Front st.; BALTIMORE, 100 West Lombard st.; PHILADELPHIA, 57 North Front st.; BOSTON, 141 Milk st.; NEW YORK, 279 Broadway.

well to employ the police throughout the country as enumerators? Being uniformed, their authority would be undisputed, while their experience in collecting facts and making out reports would enable them to perform their duties as numerators with expedition, skill and correctness.

FREDERICK L. JENKINS.

BROOKLYN, Nov. 24, 1879.

Iron Manufacture in Central India.

An interesting communication, in which an iron works of Central India is fully described, has been published in the *Zeitschr. des bergu. hütt. Vereines f. Steiermark*, by Cecil Ritter von Schwarz, of Gwalior. The ores worked are remarkably pure and rich, specular and magnetic ores being chiefly used, while for steel manufacture highly manganiferous limonites are employed. Mining may be carried on by anybody on payment of a tax of 3 annas per 12 mounds (about 17 cents per short ton), two men being able to raise and prepare about 2 tons in a day. The furnaces used are made of clay, about one foot square in section, and are 3 feet deep, the top being level with the ground. The furnace is placed between two stone walls *m*, *m*, Fig. 1, and it is strengthened by a thick flag stone *s*, Fig. 2. A tuyere *f*, carefully prepared of clay and burnt, enters the furnace 10 inches above the bottom. It is round, 8 inches long, and has a circular orifice one inch in diameter,

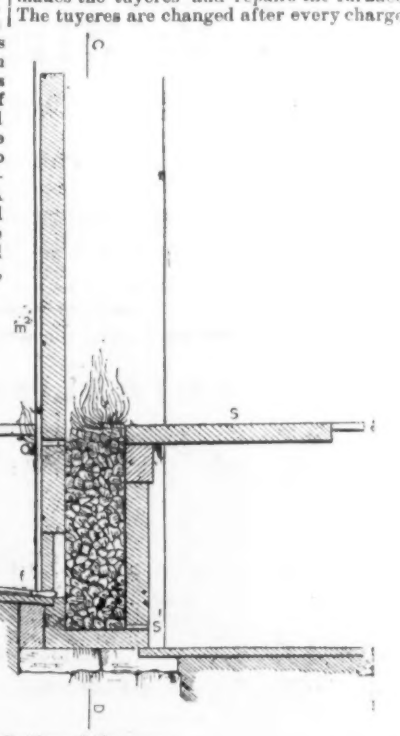


Fig. 1.—Vertical Section of Furnace.

IRON MANUFACTURE IN CENTRAL INDIA.

which enlarges gradually for the reception of the blast pipe. The slag is tapped at S, and there is a one-inch opening at O, through which a small flame penetrates, serving as an indicator of the working of the furnace. The clay wall, *m* 2, protects the workman from radiated heat. On the top of this wall there is a small stone idol, the "Schicoa," and Waschist's holy cow. Both of these and the mark called "Tillak," which is painted in flaming red on the wall at *a*, are supposed to maintain good working order and to afford protection against evil spirits.

The blowing apparatus consists of two

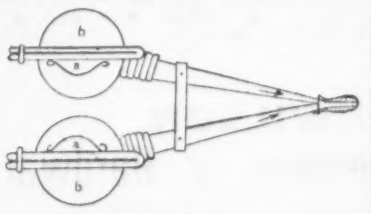


Fig. 2.—Plan.

cylindrical leather bellows, each made of a goat's hide, prepared with oil to keep the leather flexible. The tail end of the hide is slit, and two bamboo canes are sewed into the two parts thus obtained, one end being fastened, while the others are losely connected. They are elastic, therefore, and form an open conical slit, through which air enters the bellows when it is drawn upward.

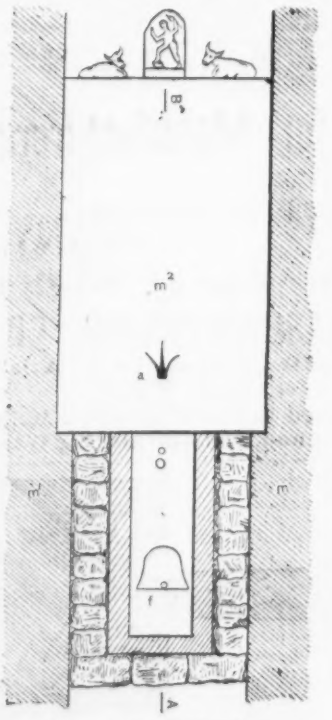


Fig. 3.—Front Elevation.

As soon as the bellows are drawn up high enough, the slit is closed by pressing the bamboo canes together, so that the air is forced into the blast-pipe as soon as the bellows are pressed down. The straps *a*, *a*, attached to the bamboo canes, are wound around the hand and serve to draw up the bellows. When one is drawn up the other is compressed by the workman, who throws his entire weight upon it. The workman sits on a stool between the two bellows; he is relieved every hour, although the labor does not seem to be very hard.

The method of working very much resembles that of a bloomary; 40 pounds of ore are charged at a time, without any flux whatever, and after about two hours' blowing a lump (called "lohta") of 15 to 18 pounds is hauled out, the workman seizing it from above with a pair of tongs and drawing it out of the top of the furnace. It is dragged out of the works and hammered on an anvil in the open air, until a flat cylindrical disk about 7 inches in diameter and 2 inches thick is obtained. In 24 hours 10 lumps are made, 400 pounds of charcoal and 400 pounds of ore being consumed in the same time. Four men and a foreman, generally the owner, work at a furnace during 24 hours. The former take turns at the bellows, while the latter gets out the iron, makes the tuyeres and repairs the furnace. The tuyeres are changed after every charge, while the furnace is patched up every 24 hours. These five men earn together, in 24 hours, 1 rupee 1 anna (about 50 cents), producing during that time about 170 pounds of blooms.

The lumps are reworked in open smith forges, primitively constructed of clay. The lump is first cut into two parts, which are then wrought into spades, horseshoes and other small articles at a loss of 45 to 50 per cent., a consumption of 250 pounds of charcoal and an average daily (24 hours) production of 84 pounds of finished goods, the labor of six men and four boys being required. Thus a daily production of 84 pounds of finished goods requires the labor of 11 men and four boys, 650 pounds of charcoal and 400 pounds of ore. Notwithstanding these unfavorable results the iron is very cheap, and although at present prices the English iron is very low, the Indian successfully competes with it. In quality it is at least equal to the Bowling, Low Moor and Farnley iron sold in India.

Petroleum in Peru.

The oil lands of Peru are in the coast region. They extend from Cape Blanco to the Tumbez River, a distance of 120 miles. The tract is 60 miles wide and contains 4,408,000 acres. Where the waves of the Pacific have worn away the rocks at places along the coast oil trickles out at low tide, and for 90 miles this outcrop may be followed along the ocean. The village of Zorritos is the present center of operations in the Peruvian region, which is almost entirely on one of the great estates of the country, known as the estate of Mancora. For many years the existence of asphaltum, both solid and liquid, has been known on this estate. The solid is found on the surface. From the sides of pits dug to the depth of about 20 feet the liquid asphaltum oozes. This mineral tar has an odor of pitch, and leaves no residuum when burned. This asphaltum was mined for the purpose of lining Pisco jars and other Peruvian crockery. The petroleum that gathered in these pits, after the discovery of oil in Pennsylvania had become known the world over, led Alexander Ruden, the agent of the Mancora estate, to experiment with a view to test the oil-bearing capacity of the mineral tar region. A. E. Prentice was then Civil Engineer to the Peruvian Government. Alexander Ruden petitioned the government to send the engineer on a prospecting tour over the estate. Prentice began operations in the fall of 1863. A well was sunk in one of the asphaltum pits, which was nearly filled with crude petroleum. At a depth of 140 feet—60 feet below the ocean—a vein of oil was struck. The yield was small. Mr. Ruden's interest in the matter flagged, and further experiments were not made by him.

Mr. F. Prentice, a Pennsylvania oil operator, was informed of the prospects on the Mancora estate. In 1867 he paid Peru a visit. A well was put down near Zorritos. At the depth of 146 feet a volcanic formation was reached by the drill and oil was found. The well pumped 60 barrels a day. A second well was put down. Oil was reached at a depth of 220 feet. The yield rapidly declined from 12 barrels to 7 barrels a day. Mr. Prentice was satisfied that the region would prove productive, but he held his own counsel. In 1876 he succeeded in securing control of the entire estate for the purpose of producing oil. In that year the second well mentioned above was drilled to the depth of nearly 500 feet. The tools struck a vein of oil-bearing sandstone and immediately sank 10 feet. This was the first finding of the sandstone. The strike was followed by a column of oil that filled

AUBURN FILE WORKS,

Superior Hand-Cut

FILES AND RASPS,

MADE FROM IMPORTED STEEL. EVERY FILE WARRANTED.

FULLER BROS., Sole Agents,

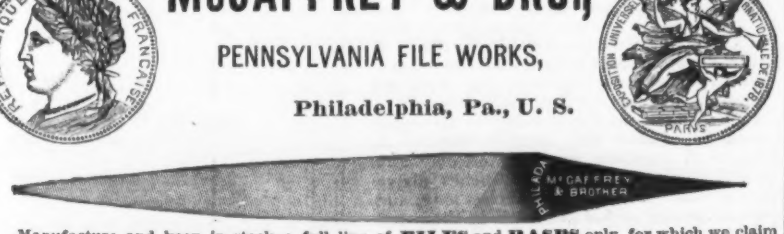
89 Chambers and 71 Reade Streets, N. Y

Paris, 1878. *For Superiority.*

McCAFFREY & BRO.,

PENNSYLVANIA FILE WORKS,

Philadelphia, Pa., U. S.

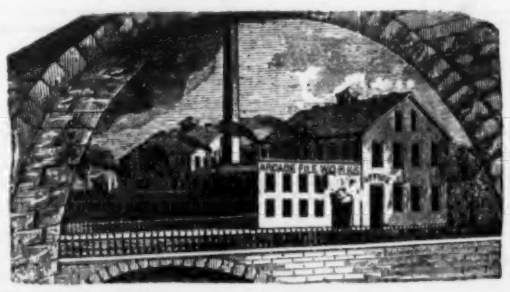


Manufacture and keep in stock a full line of **FILES** and **RASPS** only, for which we claim special advantages over the ordinary goods, and ask domestic and foreign buyers to allow us to compete for their trade.

Superiority acknowledged wherever used, sold or exhibited.

ESTABLISHED 1848.

C. T. DRAPER & CO.
Sing Sing, N. Y.
Manufacturers of SUPERIOR
HAND CUT



FILES and RASPS
Made from Best
ENGLISH CAST STEEL.
Quality guaranteed by written warranty when required.

SNELL MANUFACTURING COMPANY,

FISKDALE, MASS.,

TENNIS & WILSON,

Sole Agents,

82 Reade St., New York,

MANUFACTURERS OF

Angular and Upright Boring Machines,
Boring Machine Augers,
Solid Cast-Steel Carpenters' Augers,
Extra Cast-Steel Auger Bits,
Jennings' Pattern Auger Bits,
Car Bits, 9 and 12-inch Twist,
Phœnix Superior Cast-Steel Auger Bits,
Screw-Driver Bits,
Taper Pod Gimlets,
Taper Pod Gimlet Bits,
Countersink Gimlet Bits,
Long Millwright Solid Cast-Steel Augers,
Long Rafting Solid Cast-Steel Augers,
Coopers' Doweling Bits and Boat-Builders' Bits,
And all kinds of Machine Bits made to order.

TENNIS & WILSON,

Manufacturers and Jobbers of Hardware,

80 & 82 READE STREET, NEW YORK.

SOLE AGENTS FOR

Snell Mfg. Co.	Boring Machines, Augers, Auger Bits, Car Bits, Jennings' Pattern Auger Bits.
Wilson Mfg. Co.	Coffee Mills, Vises, Jack Screws, &c
Clark & Co.	Butts, Blind Hinges, Gate Hinges, Thumb Latches, Axle Pulleys, Sash Bolts
Oak Hill Mfg. Co.,	Brackets, Barn Door Hangers, Cylinder Heads, Lamb's Tea-Pot Handles, Coat and Hat Hooks, &c.
H. Clark's	Cast Steel Claw, Lath and Shingling Hatchets.
T. & W.	Hand-Forged Screw Drivers.
Nashua Lock Co.	Locks, Knobs, &c.
Taylor Mfg. Co.	Bells, Weed's Molasses Gates, &c.
Fisher & Norris	Anvils and Chain Vises.
W. Hunt & Co.	Razor Strops.
Wellington Mills	Genuine Turkey Emery.
Bromwell Mfg Co	Patent Corn Popper.
Hill's	Patent Nut Cracker.

DEPOT FOR

Davis' Inclinometers, Patent Levels and Iron Planes.
Holden's Files.
Woolson's Wood Mouse Traps.
Bemis & Call's Patent Wrenches, Calipers, Dividers.
Clark's Axes and Hatchets.
Lincoln's Molasses Gates.
Aiken's Saw Sets and Awls and Tools.
Leach's Saw Sets.
Stillman's Saw Sets.
H. A. Lothrop & Co., Trowels, Bread Knives and Mincing Knives, and Ames' Shoe Knives and Skivers.



Handles for Manufacturers.

SELECTED STOCK,

SEASONED THOROUGHLY,

WELL MADE.

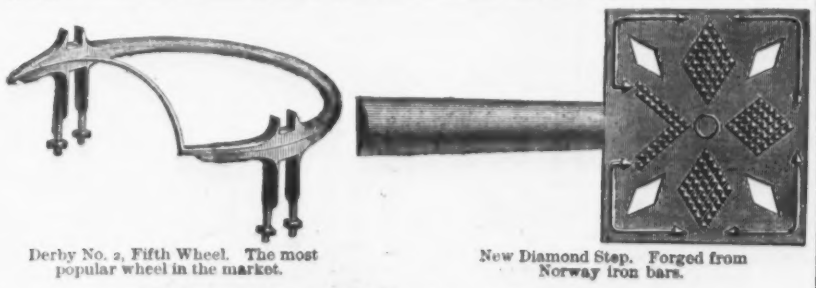
Orders solicited from close buyers who want good work.

RIPLEY MANUFACTURING CO.,

Unionville, Conn., U. S. A.

MANUFACTURERS OF

Common Mouse Traps, Porcelain Lined Lemon Squeezers, Mallets, Rosewood Faucets, Steak Hammers and Housefurnishing Ware.



Derby No. 2, Fifth Wheel. The most popular wheel in the market.

New Diamond Step. Forged from Norway iron bars.

WILCOX & HOWE,

Birmingham, Conn.,

MANUFACTURERS OF

First-Class Carriage Forgings, Fifth Wheels, Steps, Body Loops, Stay Ends. Offsets, Long Joint Ends, &c., &c.

Our Illustrated Catalogue furnished to the trade.

FILES & RASPS,

Established 1868.

Best Cast Steel.

HAND-CUT. Manufactured by

JOHNSON & BRO.

No. 1 Commercial Street, Newark, N. J.

SPENCER & UNDERHILL,

94 Chambers St., N. Y., Agents for

American Screw Co.'s Wood, Machine and Rail Screws, Stove and Tire Bolts, Rivets, &c.
O. Ames & Sons, Shovels, Spades and Scoops.
A. Field & Son, Tacks, Brads, Nails, &c.
G. F. Warner & Co., Carriage Clamps.
We have also on hand a general assortment of Hardware.



THE GIANT PAD LOCK.

Manufactured by

THE SMITH & EGGE MFG. CO.

(Centennial Award.)

"Superior in Every Respect."

This is one of the **best selling Locks** in the market, and affords the dealer a large profit. It is thoroughly and strongly made—of the best material—very handsome in appearance, and every Lock is warranted. Orders solicited. Address as above

Lock Box 105, Bridgeport, Conn.

PRIZE MEDALLISTS:

Exhibitions of 1862, 1865, 1867, 1872, 1873, and only award and medal for Noiseless Steel Shutters at Philadelphia, 1876, and Paris, 1878.

CLARK & CO.,

Original Inventors and Sole Patentees of

Noiseless Self-Coiling Revolving

STEEL SHUTTERS,

FIRE AND BURGLAR PROOF.

ALSO IMPROVED

Rolling Wood Shutters

Of various kinds. Endorsed by the **Leading Architects of the World.**

Send for Catalogue.

Office and Manufactory,

162 & 164 West 27th St., N. Y.



Manufactured by the

QUEEN CITY CABINET CO., Cincinnati, Ohio.

Liberal discounts to dealers. Circulars free.



HOWSONS'

OFFICES FOR PROCURING

UNITED STATES AND FOREIGN

PATENTS,

Forrest Buildings,

119 SOUTH FOURTH ST., PHILADELPHIA

AND MARBLE BUILDINGS

605 Seventh St. (Opposite U. S. Patent Office), ***Washington, D. C.***

H. HOWSON, Solicitor of Patents. | C. HOWSON, Attorney at Law.

Communications should be addressed to the PRINCIPAL OFFICES, PHILADELPHIA.

PATENTS.

THOMAS D. STETSON, 23 Murray St., N. Y., Patent Solicitor and Expert.

PATENT MINERAL WOOL,

Entirely fire-proof, undecaying and the best non-conductor of Heat, Cold and Sound. Used extensively for lining steam pipes and boilers, underground and open-air pipes, water tanks, refrigerators, cold storage houses, roofs and walls of dwellings, drying kilns, deadening floors of railway passenger cars, &c.

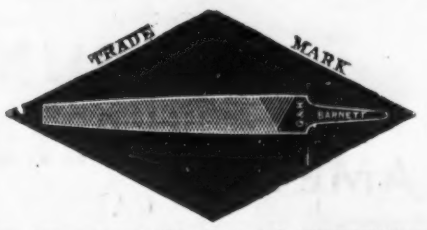
A. D. ELBERS,

26½ Broadway, New York.

Address P. O. Box 4461.

Black Diamond File Works.







Awarded by Jurors of Centennial Exposition, 1876, for "VERY SUPERIOR GOODS."

G. & H. BARNETT

39, 41 & 43 Richmond St., Philadelphia.

CHARLES B. PAUL,

Manufacturer of HAND CUT FILES.

Warranted **CAST STEEL.** 187 Tenth Street, Williamsburgh, New York.

All descriptions of Files made to order. Price List mailed on application. **Established 1863.**

THE STANLEY WORKS,

MANUFACTURERS OF

Wrought Iron Butts, Hinges

AND

DOOR BOLTS,

Plain, Japanned, Bronzed and Plated.

FACTORIES: New Britain, Connecticut.

WAREHOUSE: 79 Chambers St., New York.

SABIN MFG. CO.,

MONTPELIER, VT., Manufacturers of

PATENT DOUBLE ACTING SPRING BUTTS

Sabin's Lever Door Springs

For Heavy Doors.

The BOSS and CROWN SPRINGS for Screen and Light Inside Doors.

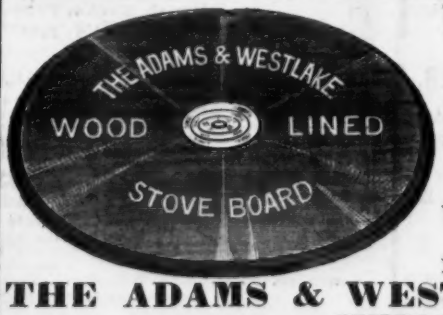
General Agents. { HENRY BROOKS & CO., 127 Milk Street, Boston.
E. P. WHIPPLE, 100 Chambers Street, New York.
KELLOGG, JOHNSON & BLISS, 108 Randolph Street, Chicago.

GRAHAM & HAINES,

P. O. Box 1040. **113 Chambers and 95 Reade Streets, New York.**

HARDWARE MANUFACTURERS' AGENTS, as follows:

Lawrence Curry Comb Co., Curry Combs.	***Wheeling Hinge Co.,*** Hinges and Wrought Butts.	***W. D. Turner & Co.,*** Geneva Hand Fluters.
Howard Bros. & Co., Cotton, Wool and Curry Cards	***Northwestern Horse Nail Co.*** Horse Nails.	***D. B. Niles & Son,*** Hand and Sleigh Bells.
Thompson, Derby & Co., Scythe Snaths.	***A. G. Coes & Co.,*** Coes' Genuine Screw Wrenches.	***C. S. Osborne & Co.,*** Compasses, Calipers, Dividers, &c.
Otsego Fork Mills, Steel Forks, Rakes, Hoes, &c.	***F. K. Silby,*** Emery Cloth.	***C. W. Maguire,*** Brushes.
H. Knickerbacker, Scythes, Axes and Tools.	***Holroyd & Co.,*** Stocks & Dies.	***Clark Bros. & Co.,*** Carriage Bolts, &c.
H. W. Kipp, Nail Hammers.	***Sedgwick Mfg. Co.,*** Butter and Flour Triers, etc.	***Louverre & Tucker,*** the Genuine Knox Fluting Machine.
Kloman, Park & Co., Vises, Picks, Mattocks, Grub Hoes, &c.	***Ripley Mfg. Co.,*** Mouse Traps.	***T. B. Barclay,*** "Dodge's" Kentucky Cow Bells.
Jacobus & Nimick Mfg. Co., Locks, &c.	***Sam'l Loring,*** Plymouth Tack & Rivet Works.	***Lane Bros.,*** Swift's and Grocers' Coffee Mills and Measuring Faucets, &c.
Sandusky Tool Co., Planes and Planeirons.	***Carr, Crawley & Devlin,*** Miscellaneous Hardware & Cast Butts.	***T. C. Richards Hardware Co.*** Bright Wire Goods, Picture Nails, &c
Geo. M. Eddy & Co. Measuring Tapes.	***J. Mallinson,*** Cast Steel Shears and Scissors.	
	Ketchem's Pat. Metallic Sieves.	



THE ADAMS AND WESTLAKE

Wood-Lined and Plain Zinc

STOVE BOARDS.

NEAT AND SUBSTANTIAL.

Will not warp or lose their shape. Easily kept clean.

For sale by Hardware and Stove Dealers.

THE ADAMS & WESTLAKE MFG. CO.,

CHICAGO,

Sole Manufacturers of Mann's Tin-Rim Sieves.

THE AMERICAN MACHINE CO.,

Manufacturers of

HARDWARE SPECIALTIES.

Office and Factory: ***No. 1916 to 1924 North 4th St., Philadelphia.***

Branch House: ***No. 128 Chambers St., New York.***

SPECIALTIES: Fluting Machines, Hand Fluters, Plaiting Machines, Christmas Tree Holders, Bickford Portable Pump, Mrs. Potts' Patent Cold-Handle "Crown" Irons, &c., &c.

COXE BROS. & CO.,

Cross Creek Lehigh Coal.

The Purity and Strength of this Coal especially adapt it for the working of Iron and Metals.

GENERAL OFFICE, 12 & 14 Trinity Building, 111 Broadway, New York.

BRANCH OFFICE, 306 Walnut Place, Philadelphia.

E. B. & S. W. ELY, Agents, P. O. Box 262, N. Y.

TACKS, NAILS & RIVETS.

Upholsterers' and Gimp Tacks, Chair and Cigar Box Nails, &c.

New York Salesroom, 116 Chambers Street.

AMERICAN TACK CO., Fairhaven, Mass.

A. FIELD & SONS,

TAUNTON, MASS.,

MANUFACTURERS OF

AMERICAN AND FRENCH

WIRE NAILS,

TACKS, SHOE NAILS,

And Every Variety of Small Nails.

Offices & Factories at Taunton, Mass. Warehouse at 78 Chambers St., New York,

where may be found a full assortment of Tacks, Brads, Wire Nails, &c., for the accommodation of the New York Wholesale and Jobbing Trade.

☞ Any variations from the regular size or shape of the above-named goods made from sample to order. ☜

A SILVER MEDAL has been awarded above goods at the Paris Exposition, being the only medal awarded any American manufacturer of Tacks and Wire Nails.

Hoisting Machinery

MANUFACTURED BY

CRANE BROTHERS MFG. CO.,

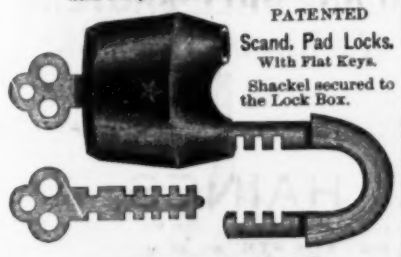
Chicago.

STAR LOCK WORKS.

ESTABLISHED 1836.

Trunk Locks, Pad Locks, Dead Latches, Door Springs, Trunk Stays, Keys, &c., &c.

110 South 8th St., and Sansom, bet. 8th and 9th, PHILADELPHIA.



PATENTED

Scand. Pad Locks.

With Flat Keys.

Shackel secured to the Lock Box.

HILLEBRAND & WOLF.



A. A. WEEKS,

Manufacturer of

Hardware Specialties,

82 John St., New York.

REDUCTION IN PRICE LIST

FOR THE FALL TRADE.

AMERICAN MINCING KNIFE,

BEST AND CHEAPEST.



Catalogue of Hardware Novelties upon application.

PHILADELPHIA NOVELTY MFG. CO.,

821 Cherry Street, Philadelphia, Pa.

CLOTHES WRINGERS.



Steel Elliptic Spring. Self-Adjusting

T. J. ALEXANDER, Manager,

BOSTON, MASS.

THE ANSONIA CORRUGATED STOVE PLATFORM,

With Patented O. G. Border.



Cut Showing Round Platform.

ROUND ZINC.

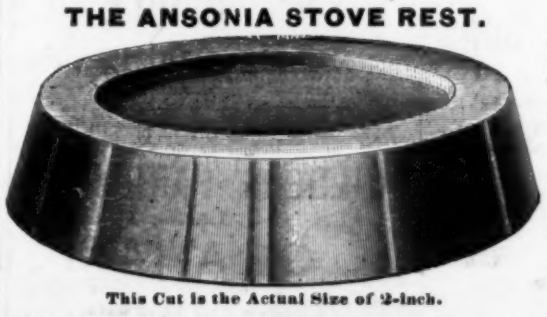
27, 30, 32, 34, 36 inch.

Manufactured of heavy metal, requiring no nailing or lining, the edge retaining its form. Superior pattern, finish and quality. Price as low as any.

Send for List and Discount.

Packed 12 in each case.

THE ANSONIA STOVE REST.



This Cut is the Actual Size of 2-inch.

STOVE RESTS are designed to place under the feet of Stoves and Ranges, for the purpose of raising them from the floor or platform. They are about ¼-inch thick, covered with sheet metal in zinc, brass and nickel plate. Highly polished and finished. Packed one set of 4 pieces in each paper box, and 36 sets in each case. Sizes (inside of circle on top)

2, 2½, 2¼, 3⅛ inch.

Send for full Description and Prices.

ANSONIA BRASS AND COPPER CO., 19 Cliff St., New York.

NEW YORK BELTING AND PACKING COMPANY,

The oldest and largest manufacturers in the United States of

Vulcanized Rubber Fabrics

In Every Form, Adapted to Mechanical Purposes.

MACHINE BELTING with smooth metallic rubber surface.
STEAM PACKING in every form and variety.
LEADING AND SUCTION HOSE, of any size or strength.
"TEST" HOSE.—*This extra quality of Rubber Hose is made expressly for steam Fire Engine use, and will stand a pressure of 400 lbs. per square inch.*



SOLID EMERY VULCANITE WHEELS for grinding and polishing metals—the ORIGINAL Solid Emery Wheel, of which all other kinds are imitations and greatly inferior.
CAR SPRINGS of a superior quality, and of all the various sizes used.
PATENT "SMOOTH BORE" RUBBER SUCTION HOSE.

CABLE ANTISEPTIC COTTON HOSE. Patented July 8, 1873. This is a rubber-lined, extra heavy Cotton Hose, woven seamless in a peculiar manner, to insure *compactness and durability*. The 3-ply weighs 40 lbs to the section, and has been tested to 400 lbs. It is the lightest and most durable seamless Cotton Hose in the market. For use on Hand or Steam Fire Engines.

ANTISEPTIC LINEN AND RUBBER-LINED LINEN HOSE. A cheap and durable article for mining, mill and factory purposes. Will stand a pressure of 300 lbs. per square inch.

CAUTION.—Our name is stamped in full on all our best Standard Belting, Packing and Hose. Buy that only. The best is the cheapest.

WAREHOUSE, 37 and 38 Park Row, New York.

JOHN H. CHEEVER, Treasurer.

Price lists and further information may be obtained by mail or otherwise on application.

RICHARD DUDGEON,

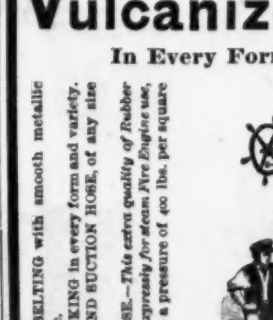
No. 24 Columbia Street, New York,

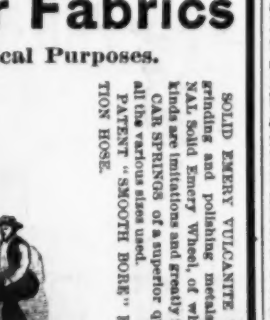
Maker and Patentee of the Improved

Hydraulic Jacks

AND

Punches.





Roller Tube Expanders and Direct Acting Steam Hammers.

Communications by letter will receive prompt attention.

Jacks for pressing on Car Wheels or Crank Pins made to order.

EVERY

PUTNAM NAIL

is drawn down to a point from the rod, thus :

It is the only Hot Forged and Hammer Pointed Horse Shoe Nail, made by machinery, in the World.

Some other manufacturers claim to make a hot forged Nail, but you will observe on all such a sheared edge near the point.

P. O. Address, Neponset, Mass., U. S. A.

THE PUTNAM NAIL CO., Boston.

the 6-inch casing, and was thrown 70 feet in the air. In attempting to control the great flow by inserting tubing in the well, the inexperienced employees let the tubing drop to the bottom. The side caved in soon afterward and stopped the flow. The well is still plugged. Mr. Prentice says its capacity will be 1000 barrels a day. Another well of his near the above has been in use for three years. It has never been torpedoed nor recupped. It yields 600 barrels a day. Mr. Prentice's experiments have proved that the deeper the wells are sunk the larger the yield is. At 600 feet he declares that a well in his Peruvian regions will pump 5000 barrels a day. Back in the mountains some of his men have struck a vein of petroleum by merely digging a pit 28 feet deep. Several of these pits have been dug. Oil accumulates in them in paying quantities. Mr. Prentice has a refinery at Zorritos. Its capacity is 200 barrels. This he is now enlarging.

Sir Henry Bessemer at Home.

The London *World* prints the following gossip concerning the home and home life of Sir Henry Bessemer :

The Bessemer estate at Denmark Hill has one great advantage ; it is some thirty or forty acres in extent, and is on the slope of the hill looking toward the Crystal Palace, the sole—but not, it is to be hoped, eternal—blot in the landscape. Fortunately, too, a great part of the hideous glass-houses is hidden by the trees, and the eye looking southwards is only outraged by its offensive towers. From the terrace of Sir Henry Bessemer's house the distant view is, with this slight exception, singularly pleasing and essentially English in its inhabited sylvan character. The foreground of the picture is almost entirely manufactured. Its natural slope toward the valley is perhaps generally maintained, but hills have grown where there were depressions, rocks have sprouted forth where there was nothing but gravel, and a lake, with its feeder and outlet, forms part of a purely artificial river system. Beyond a superb terraced lawn is a sweet bit of real nature, a meadow in which the tall ryegrass, buttercups and oxeyed daisies wave at every puff of wind, making the rich carpet red, yellow and white by turns. At the lower side of this fat meadow is a bowling-green, level as a billiard table, separated from it by a rim of ground ivy ; next to which comes the triumph of landscape-gardening, the great clumps of rhododendrons, the rocky shore and the picturesque lake : "Nowhere," Sir Henry Bessemer tells his guests, "more than 18 inches deep—an excellent depth for summer boating and winter skating, and most convenient if a child falls out of the boat or the ice gives way. It looks, too, in a rainy climate like ours, which rarely permits water to become thoroughly clear, just as deep as if it measured the poetical five fathom. All concrete bottom, too, but plenty of fish for all that. Deep ponds and streams are useless, except for navigation. For all purposes of pleasure they are much better shallow." Around the lake are thick shrubberies in which hawthorne, jasmine and honeysuckle contend with lilac, laburnum, laurel and innumerable rhododendrons. Pushing through these is seen the tall form of the host, a stalwart, broad-shouldered man, quick and active despite his 66 years ; one of those men, too, whom one cannot imagine in shooting jacket and billycock, or otherwise than in neat broadcloth, topped by orthodox "stovepipe," and with neck encircled by the black satin stock worn by our fathers, and which simulates a twice-round necktie until the treacherous buckle at the back asserts itself above the collar of the coat. Sir Henry Bessemer, without being a dandy, is one of the neat-and-trim order of men who enjoy a species of immunity from heat and dust. Presently the host vanishes in a bush, as if by a pantomimic trick, and in a moment reappears and leads the way into a cavern filled with a magnificent collection of ferns, heated to a precise temperature, and lighted by a skillful combination of top lights and mirrors. At one extremity of this cave, lined with rocks made of brick and cement, is a waterfall pouring over a glass wall ; at the other a snug little smoking-room looking over the lake, with all necessary refreshments hidden behind a rock, apparently as massive as the Cheesewring, and of nearly the same outline.

The ingenious amateur landscape gardener who plotted out all this pleasure ground himself, and experienced the greatest difficulty in avoiding geometrical forms, is an inventor, if the term may be used, of the second generation. His father was by turns an engineer, an inventor of improvements in microscopes, and a type founder, and named his son after Henry Caslon, with whom he was at one time associated in business. Elected a member of the French Academy of Sciences at the age of 25, the elder Bessemer was ruined by the French Revolution, and, after a narrow escape of his life, returned to his own country, where he achieved a modest independence. Young Bessemer, destined by his father for a mechanical engineer, was naturally let to other pursuits, particularly the arts of design, and his first invention was a machine for making Utrecht velvet. He next distinguished himself by making a pair of cutting dies for preventing the frauds practiced upon the revenue through the transfer of stamps from old to new documents. This invention brought him more honor than profit ; but he was more successful with his improvements in bank-note engraving, and had already taken his place in the front rank of inventors when an accident led him to the discovery which established his fortune on such solid basis as to enable him to pursue his investigations into the manufacture of steel. His sister, who, like himself, was fond of drawing and painting, one day asked him to buy her some gold at an artist-colorman's. Knowing nothing of the gold powder sold for the purpose of illumination, he was amazed to find that its retail price was 7/ an ounce—too little, as he argued, for gold, but a tremendous price for an alloy of copper. Inspection proved that there was not an atom of gold in it, its high cost being due entirely to the labor of beating the alloy known as "Dutch metal" into thin leaves and then grinding them into powder by hand. Mr. Bessemer at once set to work to make this powder by machinery. His alloy was perfect, his powder impalpable, but unluckily useless, inasmuch as amorphous particles do not reflect light. After putting his gold-powder machinery aside for a year he thought out a new plan, and sure of being right, prepared to manufacture on a large scale and without the protection of a patent. To prevent any person save two members of his own family from obtaining the slightest inkling of his project, he made the drawings himself for five self-acting machines, and so distributed the parts among different engineers in different towns that no man might know what the apparatus he was making was intended for. The separate pieces being delivered in London, Mr. Bessemer and his two young relatives, who have carried on the manufacture since he gave it up to them, put his machinery together, and at once made as much gold and bronze paint as they pleased, and at a price which drove the imported material out of the market.

The story of Bessemer steel, which has immortalized the name of its inventor, is too well known to need more than rapid notice ; the beautiful and picturesque process of blowing the carbon out of molten iron and then replacing it by the addition of the exact quantity necessary to make steel, being almost as familiar as the giant forgings at Woolwich. It is parlous work to describe any invention, however well known ; but this much is clear. A gentleman named Marshall Heath, a civil servant of "John Company," was many years ago unfortunate enough to observe that manganese was used in the manufacture of "wootz," or Indian steel, and introduced manganese in powder, protected by patent, to the steel makers of Sheffield, who used it until they discovered that the oxide of that metal would serve their purpose. The story of Mr. Heath, who was harassed into the grave by his efforts to protect his patent against infringement, was told in an early number of *Household Words*, in which he was held up as the type of the unhappy inventor. It is the application of the manganiferous iron known as "spiegeleisen" to the fluid pig iron which converts it into steel ; but the Bessemer invention is rather the antecedent process of burning out the carbon by the production of a degree of heat previously deemed unattainable. Technicalities apart, the discovery of a method by which steel can be produced at the price of wrought iron is the greatest step in advance in the history of metallurgy. From the royalties first of 40 and 20 shillings and subsequently of half a crown per ton, the inventor and his partners, who participated to the extent of one-fifth, realized more than a million sterling, besides the profit of their manufacturing business at Sheffield. Sir Henry Bessemer himself modestly attributes the rich reward he has reaped from his invention to his good fortune in not having hit upon it till he was sufficiently fortified with cash to avoid the necessity of seeking for a capitalist to help him on, and take the lion's share of his gains. Perhaps no revolution has ever been so suddenly accomplished and so completely to the satisfaction of the author and of the world. It is but 23 years since the inventor read his paper "On the Manufacture of Iron and Steel without Fuel," before the British Association, and already rails and tires, ships and bridges, boilers and cutlery, are made from it throughout the civilized world.

Sir Henry Bessemer has, after the manner of English scientific men generally, found his own country the last to award him an honorary distinction—limited, when tardily granted, to mere knighthood, a rank flung to civic functionaries on the occasion of royal visits. Had he never invented or done anything but make money for himself and spend some of it on electioneering, he might have been a baronet, perhaps a peer ; but knighthood is thought good enough for the greatest industrial discoverer since Watt and Arkwright. Foreigners have been less chary of recognizing the value of original thought, patience and skill. The late Emperor of the French was anxious to present Mr. Bessemer with the Grand Cross of the Legion of Honor ; but as the permission to wear it in this country, twice demanded, was twice refused, the decoration was not conferred. The Emperor, however, was not to be altogether balked, and gave Mr. Bessemer a magnificent gold medal. In the words of the Vicomte Anatole de Beaupersil, he may be described as *criblé de médailles* of the kind given to people "for doing something ;" having among others the Telford Gold Medal awarded by the Institution of Civil Engineers, a medal from the King of Wurtemberg, the Albert Gold Medal of the Society of Arts, and the Knight Commandership of Francis Joseph.

At the present moment Sir Henry Bessemer, finding no more development for his taste for landscape gardening, and having built himself a conservatory of marvellous workmanship, is employed in constructing an observatory, destined to contain an enormous telescope capable of magnifying 5000 times, a worthy rival of the famous tube set up by Lord Rosse. The Bessemer telescope, however, will not be furnished with a metal speculum, Sir Henry having discovered a method of grinding glass to the required curvature. Glass has been successfully employed in the telescope in the observatory at Paris, and equally good results are expected from the giant of Denmark Hill. The observatory required to contain an instrument of its enormous magnitude is in itself a marvel of constructive skill, and is probably the most remarkable edifice of the kind in the world. Not the dome only, as at Greenwich and elsewhere, but the entire upper floor revolves on a circular railway by hydraulic power, subject to a touch of the finger of the astronomer, who thus enjoys all the advantage of out-of door observation, combined with the comfort of his own library. Chemistry, mathematics and physics having in turn helped Sir Henry Bessemer to fortune, he has now fallen back upon astronomy as a pastime. His observatory, which is constructed in the most massive manner in order to avoid vibration, is, although approachable from the house and

Cutlery.

FRIEDMANN & LAUTERJUNG,

Manufacturers of

PEN AND POCKET CUTLERY,

Solid Steel Scissors, Shears, Razors, &c.

Sole proprietors of the renowned full concave patent

"ELECTRIC RAZORS,"

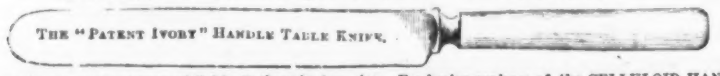
And the celebrated **"ELECTRIC SHEARS."** Nickel Plated Bows.

Agents for the BENGAL RAZORS.

AMERICAN TABLE CUTLERY, BUTCHER KNIVES, &c.

91 Chambers and 73 Reade Sts., N. Y. 423 N. Fifth St., ST. LOUIS, MO.

MERIDEN CUTLERY COMPANY.



The oldest manufacturers of Table Cutlery in America. Exclusive makers of the CELLULOID HANDLE for Table Cutlery. A most beautiful and perfect substitute for Ivory. Also makers of all kinds of TABLE, BUTCHER AND HUNTING KNIVES. Illustrated catalogues with prices sent to the trade on application.

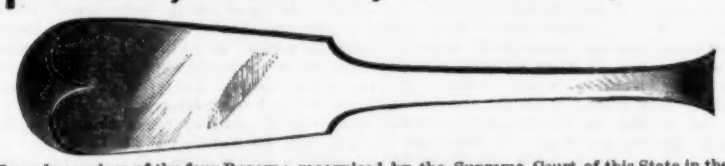
No. 49 Chambers Street, New York.

THE LAMSON & GOODNOW MFG. CO.



EXTRA HEAVILY PLATED

Spoons, Forks, Knives, Etc.



The only survivor of the four Rogers; recognized by the Supreme Court of this State in the test trial vs. C. Parker. Send for list of other patterns.

WM. ROGERS, Wallingford, Conn.

Formerly of Hartford and West Meriden. With **SIMPSON, HALL, MILLER & CO.**



AARON BURKINSHAW,

Manufacturer of **Pen and Pocket Cutlery,** Pepperell, Mass. **Established 1853.**

My Blades are forged by hand from the best Cast Steel, and warranted. To me was awarded the Gold Medal of the Conn. State Agricultural Society.

STANLEY RULE AND LEVEL CO.,

MANUFACTURERS OF

Improved Carpenters' Tools.



FACTORIES,

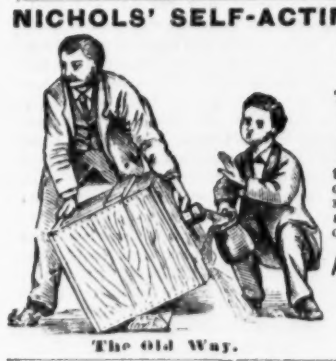
New Britain, Conn.

WAREROOMS,

29 Chambers St., New York.

No. 113. Improved Adjustable Circular Plane - - $4.00

NICHOLS' SELF-ACTINC ACID PUMP.



The Old Way.

Absolute Safety! Perfect Ease!

Time, Labor and Material saved by using the

NICHOLS ACID PUMPS,

to draw all kinds of acids from carboys. Every pump warranted. Send for new circular and price list. Manufactured only by

Acid Pump & Siphon Co

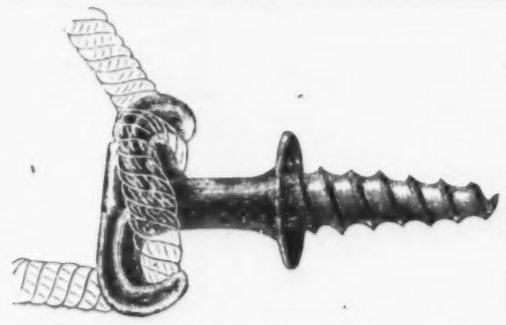
New London, Conn.



The New.

PATENT APPLIED FOR.

Champion Clothes Line Hook.



This Hook has many points of advantage over anything offered, being easily put up, holding the line firm; and a line can be put up and taken down without tying or untying, and is cheap.

Manufactured only by

ENTERPRISE MFG. CO.,

Geneva, Ohio.

VERONA TOOL WORKS.

VERONA TOOL WORKS.

METCALF, PAUL & CO.,

Pittsburgh, Pa.

BRANCHES. { St. Louis, 730 North Second Street. Chicago, 40 Dearborn Street.

PITTSBURGH, PENN'A.



Wilson Bohannan,

Manufacturer of Patent

BRASS PAD LOCKS

For Railroad Switches, Freight Cars, and the Hardware Trade. All sizes, with Brass and Steel Keys, with and without chains.

Patent Horizontal Rim Cylinder Night Latch.

Self-adjusting to doors of any thickness, with Patent Stop and Drawer Back Knob RIGHT OR LEFT HAND.

PASSENGER CAR LOCKS, Bronzed, Nickel-Plated and Japanned.

Catalogues and Samples sent upon application. **BROOKLYN, N. Y.**



Cutlery.

ALFRED H. HILDICK,

12 Warren St., N. Y.,

Importer of **CHAINS, ANVILS, VISES, &c.**

Agency of

HILL BROTHERS & CO., WALSALL, ENGLAND

GENERAL HARDWARE MERCHANTS,

And of

BALL'S PAT. SOLID STEEL SHEEP SHEARS.

These shears are unsurpassed for cheapness, durability and utility. They are made of one solid piece of steel from point to point, and cannot be broken in use either in the bow or at the junction of the shank and blade. Samples can be seen at above address, or sample lots furnished.

CORPORATE MARK

Joseph Rodgers & Sons'

(LIMITED)

CELEBRATED CUTLERY,

No. 82 Chambers Street, New York.

F. & W. CLATWORTHY, Agents.

The demand for **Joseph Rodgers & Sons'** productions having considerably increased, they have, in order to meet it, greatly extended their Manufacturing Premises and Steam power.

To distinguish Articles of **Joseph Rodgers & Sons'** Manufacture, please to see that they bear their Corporate Mark.

P. O. Box 3562.

ESTABLISHED 1836.

Alfred Field & Co.,

COMMISSION MERCHANTS,

New York, Birmingham, Sheffield, Liverpool.

Guns and Pocket Cutlery,

SPECIALTIES.

Headquarters for

ELEYS BROS.' GOODS, WRIGHT'S ANVILS,
WILSON'S BUTCHER KNIVES, &c.
WOSTENHOLM'S POCKET CUTLERY AND RAZORS.
BUTCHER'S FILES, TOOLS AND RAZORS,
STUBS' FILES, WESTERN FILES,
GREAVES' SHEEP SHEARS,
CHESTERMAN'S TAPES,
GERMAN COIL AND HALTERS and other CHAINS.
BRADES' TROWELS AND HOES,
CANASTOTA KNIFE CO.'S POCKET KNIVES.
Etc., Etc., Etc., Etc.

All sorts of Hardware and Merchandise for import and export purchased on commission.

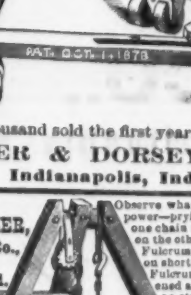
ROBERT SORBY & SONS,

SHEFFIELD,

MANUFACTURERS OF THE CELEBRATED

Kangaroo Sheep Shears,

The best Shears made.



Every Shears Guaranteed.

ALFRED FIELD & CO.,

93 Chambers St., - NEW YORK,

SOLE AGENTS.

Send for price list and terms.

Cutlery.

McCOY & CO.,

IMPORTERS OF

Hardware, Cutlery, &c.

SOLE AGENTS FOR

THEILE & QUACK'S

CELEBRATED

Pocket Knives and Scissors.

A large stock of

Muzzle & Breech Loading

English Guns.

132 DUANE ST.,

NEW YORK.

Silver Medal, 1878—Paris.



J. R. SPENCER & SON,

Albion Steel Works, Sheffield,

MANUFACTURERS OF

FILES AND STEEL,

Table Knives, Razors, Shovels, &c., &c., of every description.

CORPORATE MARK.

SPENCER SHEFFIELD

Granted 1749.

SCHRODER LOCK CO.,

Manufacturers of

BUILDERS' HARDWARE,



Locks, Latches, HINGES, AND BRONZE & BRASS GOODS Of all kinds.

JAIL LOCKS.

Office and Works,

16 & 18 East 7th Street,

CINCINNATI, OHIO.

A liberal discount to the trade.

PHŒNIX CASTER CO.,

Indianapolis, Ind.

Send for Illustrated Catalogue.



Shipped as nuts and bolts, at very low rate of freight.

Patented, Feb. 13, 1872. Oct. 1, 1878. July 1, 1879.

Mounted on Martin's Patent Caster.

Eight thousand sold the first year.

TUCKER & DORSEY, Mfrs., Indianapolis, Ind.

LIGHTNING **STUMP PULLER,**

M. E. Bunger & Co., Manufacturers, Indianapolis, Ind.

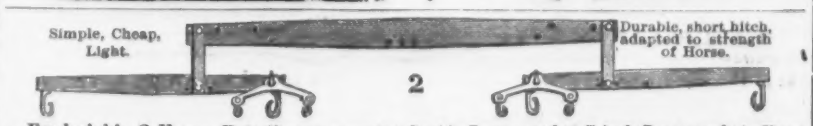
Send for Illustrated Circulars and Prices.



Observe what absolute power—prying up on one chain and down on the other. Fulcrum 1¼ inch on short bite. Fulcrum lengthened at pleasure as stump gives way, thus adding speed as desired.

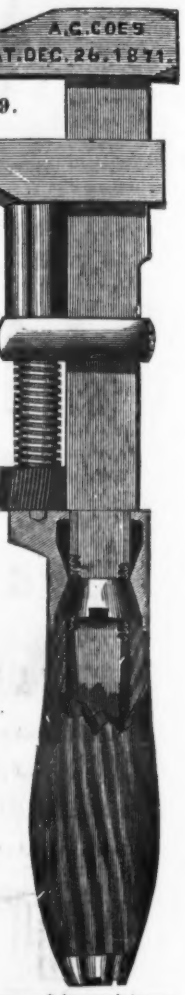
We make Till either for Coin or Scrip





Frederick's 3-Horse Equalizer is a perfect Double Tree, a perfect Tripple Tree, a perfect 2-Horse Stretcher, a perfect 3-Horse Stretcher, a perfect attachment for either 2 or 3 horses anywhere. Just the thing for fall plowing. Send for illustrated circular.

M. E. BUNGER & CO., Indianapolis, Ind., Manufacturers.



Established in 1839.

A. G. COES & CO.

WORCESTER, MASS.,

Successors to

L. & A. G. Coes,

Manufacturers of

THE GENUINE

COES

Screw Wrenches.

PATENTED,

May 2, 1871.
December 26, 1871.
December 28, 1875
August 1, 1876.

The backstrain when the wrench is used is borne by the bar—not by the handle.

The strongest Wrench made, and the only successful Re-enforced Bar.

None genuine unless stamped

A. G. COES & CO.,

Our Agents, GRAHAM & HAINES, 113 Chambers St., New York, carry a full line of our goods, and will be pleased to serve you at factory prices.

GLASS BALL CASTERS

For Furniture, Pianos, &c.



The Best and Most Ornamental Caster in the Market.

Do not cut, soil or rust carpets or matting. Center bearing, they do not split furniture. Warranted not to break. They improve the tone of pianos 25 per cent., and are recommended by physicians as a preventive of rheumatism, sleeplessness, &c. By insulating bedsteads they prevent loss of electricity from the body, and protect from lightning.

For sale by the Hardware trade generally.

For circulars and price lists address,

The Glass Ball Caster Co.,

96 JOHN STREET, NEW YORK.

IMPROVED FLOUR & SUGAR AUGER

With Bee's Patent Cutting Screw.

Best Cast Steel with Rosewood Handle.



Bores easily through any cask or barrel without splitting the wood, leaving a perfectly smooth and true hole.

Send for catalogue and price list.

SEDGEWICK MANUFACTURING CO.,

Poughkeepsie, N. Y.

COBB & DREW,

Plymouth, Mass.

Manufacturers of Copper, Brass, and Iron Rivets: Common and Swedes Iron, Leathered, Carpet, Lace and Glass Tacks; Finishing, Hungarian, Trunk Clout and Clasp Box Nails, &c. Rivets made to Order.

NEW YORK AGENCY

George C. Grundy,

HARDWARE,

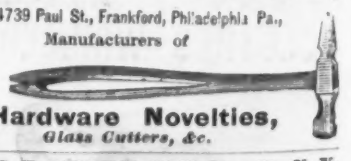
165 Greenwich Street,

Agents for the Philadelphia Star Carriage and Tire Bolts.

JAMES COMLY,

4739 Paul St., Frankford, Philadelphia Pa.,

Manufacturers of



Hardware Novelties,

Glass Cutters, &c.

CHAS. E. LITTLE, 59 Fulton St., N. Y.



1760. 1875.

Solid Cast Steel Pump Augers

Solid Cast Steel Augers & Reamers

For Boring PUMP LOGS. All sizes in stock **Socket Shanks, Ring Handles, and Connecting Rods** for the above to order. Also **Tenoning Tools** for joining log ends. **Coopers' and Slaters' Tools** Tool Chests. Tools for all trades a specialty.

WM. ROGERS & SON, AA,

MANUFACTURERS OF

Cutlery and Silver Plated Table Ware.

Trade Marks:

On Spoons..... WM. ROGERS & SON, AA. Established in 1865.

On Knives. WM. ROGERS & SON TRADE MARK HARTFORD CONN. 12

WM. ROGERS & SON TRADE MARK HARTFORD CONN. 24 On Hollow Ware.

Sextuple Plate.

Hartford.



Pat. Sept. 23, 1879.
Spring Tempered Shank.

Imperial.



Spring Tempered Shank.
Same Price as Olive.

Acme.



Same Price as Olive.

Regent.



Spring Tempered Shank.
Same Price as Olive.

OUR GOODS ARE PLATED 20 PER CENT. ABOVE STANDARD PLATE.

Address all communications to

WILLIAM ROGERS & SON,

WM. H. WATROUS, President.
F. WILLSON ROGERS, Secretary.

Drawer 30, Hartford, Conn.

GOODELL COMPANY'S TABLE CUTLERY.



This is the original **Solid** Hot Water Proof Handle. Unequalled in Strength, unapproached in style, unexcelled in finish. We have just got out some new and elegant styles of very cheap goods, as cheap as the cheapest, and better and stronger than the best of other manufacturers. The public patronage is respectfully solicited.

GOODELL COMPANY, Antrim, N. H.,

Sole Manufacturers.

HALL, ELTON & CO.,

Electro Plated Ware, German Silver and Britannia Spoons.



THE "EASTLAKE." (Patented.)

Factories, Wallingford, Conn. **Salesroom, 75 Chambers Street, New York.**



FORKS, SPOONS, Etc.,

Manufactured from Cast Steel, Plated with Nickel and Silver.

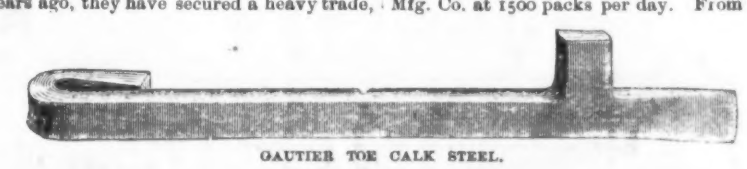
WALLACE BROTHERS, Wallingford, Conn.

the long terrace leading to the lake, so constructed that it can be entered from the private road, probably with the view of presenting or bequeathing it to some scientific society.

Gautier Toe Calk Steel.

In no class of steel, not even the highest grades, have iron dealers found so much difficulty in securing a satisfactory quality as calking steel. This want the Gautier Steel Company, Limited, of Johnstown, Pa., claim to have met, and as proof we have a sample piece from them showing tests of its fitness for this work. This piece, shown in the accompanying cut, is bent over on itself cold at one end, has a piece of iron welded on with sand only at the center, and is sharpened at the other end, and hardened enough, in water, to scratch glass. This, they say, is a test that any blacksmith can make of their steel.

They further claim that the most satisfactory proof of its excellence is given by the fact that since its introduction, less than three years ago, they have secured a heavy trade,



GAUTIER TOE CALK STEEL.

and have obtained a large portion of it from blacksmiths who had previously refused to work any steel other than imported Swedish steel. They claim that it can be worked at a high steel heat without burning, and state that it is all carefully tested before being shipped to insure uniformity.

The History of the American Pin Industry.

We are indebted to Mr. Truman Piper, of Birmingham, Conn., for the following interesting account of the labors of the late Dr. J. I. Howe in connection with the manufacture of pins in this country:

The rapid development since about 1830 of the manufacture of goods by means of automatic and other machinery in this country, is without a parallel in the world's history. The inventors of this nation not only succeeded in overcoming the most formidable difficulties at this early period, but also they "builded greater than they knew." One of them, Dr. J. I. Howe, with patient and persevering courage, contending against prejudice, inexperience and poverty, knew no defeat; and as history gives to Robert Fulton the largest credit in the matter of practical and successful steam navigation, notwithstanding his predecessors and contemporaries who thought in the same line, so, too, we believe that Dr. Howe ought to be recognized as standing at the head as the first practical and successful pin manufacturer by means of automatic machinery, whoever may be his numerous predecessors and contemporaries. Dr. Howe commenced his earlier manhood as a medical practitioner in your city. Often he has told the writer that he was the family physician of A. T. Stewart at a time when he (Stewart) had only two rooms for housekeeping—one for parlor, sitting room and kitchen, and the other for bedroom. The one, as we all know well, succeeded as a tradesman, and the other succeeded in manufacturing and developing an industry that has brought with it great wealth to this country.

The profession did not seem to be in harmony with the Doctor's tastes, so turning his attention to mechanics, he first experimented in order to find some process to vulcanize rubber, but was beat in the race by Mr. Charles Goodyear. He then gave his attention to model making for pin machines, and, after some six years of study and travel to obtain what information he could to assist in the completion of his object, the business was brought to a successful issue about the year 1836, commencing first with automatic spun-head machines, but very soon thereafter converting them into solid-headed machines. Let the reader understand that at this period in the history of mechanical pursuits in this country, there were no proper tools for the construction of complicated machinery as we have them now; no planers, no perfect gear cutters, index or milling machines, and, indeed, very few engine or self-feeding lathes. Nearly all such work was done by hand, such as trimming, chipping, filing, &c., so that the road to success in a business requiring so complex and delicate a class of automatic machinery needed in making and sticking pins, was a long and tedious one.

Very soon after the above date (1836), Dr. Howe succeeded in so perfecting his machines that they made from 40 to 50 pins per minute, and as one man could take care of 12 of them, this made one man's production 480 to 600 pins per minute, while the old English hand method then in practice could only produce about 14 pins per minute. Afterward these machines were still further improved, so as to make 60 and 70 pins per minute. When the business had become a success, other mechanics began to compete in the industry, among whom were notably Messrs. Slocum, Fowler and Atwood, who each succeeded in getting up machines that would make about 120 pins per minute, which machines have since been improved so as to make the maximum number of 160 to 170 pins per minute. The latter number is about the limit of any one single machine (unless some one or more of its parts are made double, in which case it ceases to be a "single" machine), owing to laws of limitation which hold good in mechanics as in nature.

After Dr. Howe's success in constructing his machines for making pins, there came up next in order the important question of providing means to get them more cheaply stuck on papers. Up to this time no other process was known but the old English method of hand sticking, by which only about three packs of 3360 pins could be stuck per day, the practice being to give them out to the families—the mothers and daughters—of the operators to do. About the year 1840, Dr. Howe and Mr. Samuel Slocum were both at work seeking to produce some device by which this work could be more cheaply done. First came the "crimping jaws," the invention of Dr. Howe, now indispensable; then the "grooved bed," or "distributor," of Mr. Slocum. By means of mechanically combining these two inventions, some 16 to 20 packs of pins were stuck per day. Afterward Mr. DeGrasse Fowler invented what is called the "goose neck," or "runway," which, combined with Dr. Howe's and Mr. Slocum's invention, produced from 60 to 70 packs per day, the details of which are more fully given in my article published in *The Metal Worker* of July 12. Some of these machines are now in use, having either a single or double construction, the latter being desirable in a certain class of pins. Since the sticking machines, referred to in the above, there have been machines of varied styles invented by different persons, some of which have been run at the maximum of 500 and 600 packs per day. Since 1743-4 we may safely compute the average production of the Howe Mfg. Co. at 1500 packs per day. From this date we cover a period of 36 years, in which time this establishment has been run (more than half the time) night and day. Counting 310 days of 10 hours each, which is a safe basis of computation, we then have as follows: In packs, 1500 per day, or 465,000 per year; 5,500,000 papers per year and 1,562,400,000 pins per year. If we multiply these figures by the above-named 36 years, we have the following result as the production of the Howe Mfg. Co. in said time, viz.: 16,740,000 packs, 220,880,000 papers and 56,246,400,000 pins, in weight exceeding 8000 tons. If these packs were piled one top of the other, the column being 4 inches square, these packages would reach the distance of about 770 miles, or if these packs were converted into cubic inches the result would be 703,080,000 cubic inches, or converted into cubic feet there would be 406,875 cubic feet. This would make a column 1 foot square, 135,625 yards, or 77 miles high. If the papers on which these pins are stuck were put together they would measure 63,409 miles, and the pins in said papers were laid down head to point they would reach a distance of 830,909 miles, which would go around our globe 33½ times. Now we will multiply the average annual production of the Howe Mfg. Co. for the last 36 years, viz., 465,000 packs per year by 12, which is about the capacity of the present nine or ten pin establishments of the United States running 10 hours per day, and we find there exists the requisite machinery to produce no less than 5,580,000 packs of pins per year, or 18,748,800,000 pins, which would give to every man, woman and child in the United States 468 pins each per year. The capacity of these establishments may be easily increased without forcing by a little increase of overtime so as to produce one half as many more, which would give to each individual 702 pins per annum.

We think it will not take the reader long to decide the fact that the capital and facilities invested in this business are out of all proportion to the average wants of the people of this country. Very few of these pins are used for manufacturing purposes, and from one to two per cent. may go out of the States to foreign markets, but the number would be about balanced by importation from England to satisfy the prejudice of some "fogies" who still persist in paying more for a foreign article.

Every person, we think, acquainted with the pin trade will agree with us that the present facilities for producing pins in this country exceed the consumption by nearly, if not quite, one-half. It will by this be seen that less than 50 years ago the whole number of pins that could be made per man was 14 per minute; now it has become more than 1400 per man. In sticking them on papers the average for one girl was about 10,000 pins per day then; now it has reached 800,000 to 1,000,000 per day.

We say nothing here about the process of whitening pins, as it would be of little interest to the reader, only that the process is a chemical one, and the rapidity with which it is done exceeds the old English method by at least 10 to 1. Thus it will be seen that "American genius" has not only overcome foreign cheap labor, but has also stimulated those in foreign countries to greater energy to maintain their standing.

We should not fail to make mention that there were a few who stood by Dr. Howe in his great struggle for success (while the many looked upon the enterprise with distrust; and, indeed, as late as 1841 the stock of the company went begging at 50 cents on the dollar); notably among the number were Mr. Anson Baker, Mr. Edward Cook and Mr. Jarvis Brush, then of New York City (the last two named brothers-in-law of Dr. Howe), and Mr. E. N. Shelton, of this place. Mr. Cook died long since, while Mr. Brush still lives, aged 83-4 years, with his son, Prof. Brush, of Yale College. We see that the genius of some four men—Drs. Howe, Slocum, Fowler and Atwood—have created 9 or 10 pin establishments, with a capacity equal, if not superior, to the above figures. The consequence of this is cheap pins, and, indeed, so sharp and slaughtering has the competition been that pins have been sold the last two or three years of the same weight and of better quality than the old spun-head pins (which were sold prior to "American skill" for $1 per pack) for 15 and 20 cents per pack less than the cost of the wire the pins were made of. Who will say that the people have not been stuck with great benefit!

The Ohio Iron Company, Zanesville, are now paying, and have been paying since the 3-cent card went into effect, $5.50 for puddling. They are paying for all skilled labor the regular Pittsburgh prices. Wages for wheeling cinders are $1.25 per day.

H. D. SMITH & CO.,

Plantsville, Conn.,

Manufacturers of the

BEST QUALITY CARRIAGE MAKERS' HARDWARE.

Manufacture the Largest Variety of Forged Carriage Irons of Best Material and Workmanship.

PRICES LOW FOR QUALITY OF WORK FURNISHED.

SEND FOR PRICE LIST.

SARANAC HORSE NAIL CO.

Polished or Blued Horse Nails, Hammered and Finished.

The Saranac Nails are hammered hot and the finishing and pointing are done cold. Quality is fully guaranteed. For sale by all leading iron and hardware houses.

S. P. BOWEN, President and Treasurer. J. W. LYNDE, Secretary.

PLATTSBURG, N. Y.

STERLING & CO., Agents, 7 and 9 Cliff Street, New York.

METALLIC AMMUNITION,

Rim and Central Fire, all Sizes.

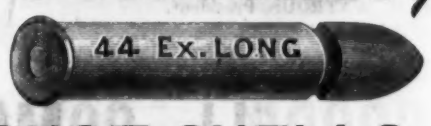
GUN WADS, Black and Pink Edge,

Guaranteed Superior to any Imported.

THE UNION METALLIC CARTRIDGE COMPANY,



BRIDGEPORT, CONN.



PRICE LISTS WITH DISCOUNTS TO THE JOBBING TRADE ON APPLICATION.

PERCUSSION CAPS.

F. C. Trimmed Edge, W. Proof.
F. L. Ground Edge, W. Proof, Foil Lined, equal to any imported.
D. W. P. Ground Edge, W. Proof, Central Fire, equal to any imported.
Musket, Paper and Tin Boxes.
Berdan, Orcutt and Wesson Primers.
Bullet Breech Caps.

PAPER and BRASS SHOT SHELLS.

PAPER.

Celebrated "U. M. C." Sizes, 8, 10, 12, 14, 16, 20, Central Fire.

BRASS.

Berdan, Solid Anvil. Sturtevant, Movable Anvil. Buffington, Movable Anvil Berdan Primer.

Kenney's Patent Indentation to prevent Wads from starting.

Agents: SCHUYLER, HARTLEY & GRAHAM, New York.

The Leading Wringer of America.

SIMPSON & GAULT,

(Peerless Wringer Co.)

New York Office, 79 Chambers St. European Offices, Place Vendome, Paris. 7 Poultry, London.

Office and Factory,
CINCINNATI, OHIO.

PEERLESS Clothes Wringers,

Sold by the Jobbing Trade everywhere.

No Better in the World.



Strongest and Handsomest.

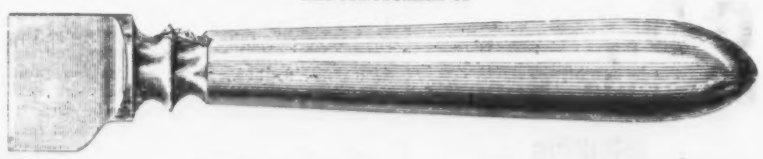
Most Saleable Wringer in the Market.
TRY A SAMPLE ORDER.

GREENFIELD TOOL CO.

(GREENFIELD CUTLERY CO.)

Greenfield, Mass., U. S. A.,

MANUFACTURERS OF



Fine Table Cutlery.

Solid Handled, Bone, Ivory, Rubber and Wood, Solid Steel Silver Plated.



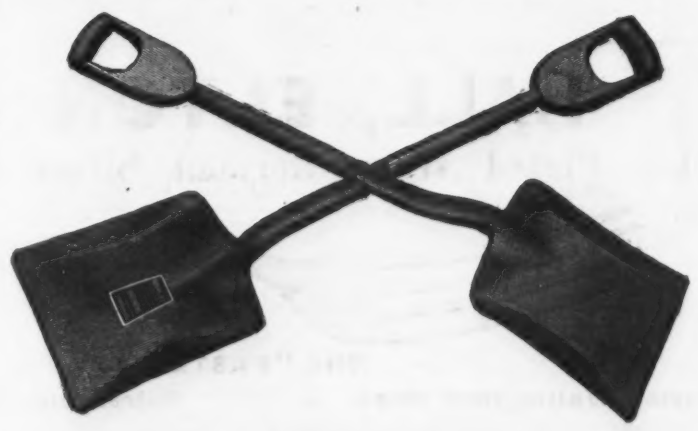
PATENT CONCAVE FORGED OX SHOES.



ALSO,

PLANES, PLANE IRONS, &c.

HUSSEY, BINNS & CO.,



PITTSBURGH.

SHOVELS, SPADES and SCOOPS.

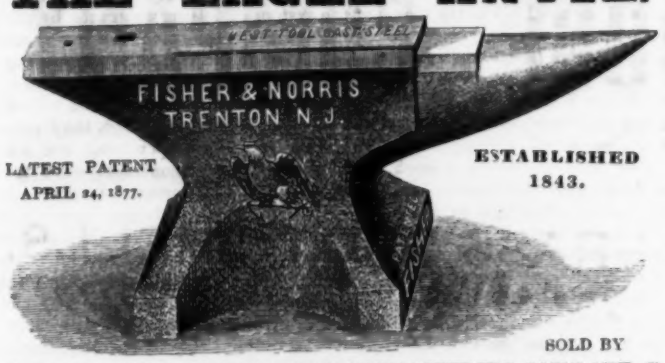


C. W. DUNLAP & CO.,
43 Chambers St., New York,
Manufacturers of all kinds superior
HOUSEKEEPING HARDWARE.
Illustrated Catalogues furnished on application.



WM. R. HARTIGAN, Burlington, Ct.,
Manufacturer of all kinds of
Tool Handles & Seat Sticks for Carriages, &c.
Also all kinds of ENAMELED GOODS MADE OF WOOD, such as
DROP KNOBS, FURNITURE KNOBS, ORGAN STOPS, BRUSH HANDLES, &c., &c.
Also sole manufacturer of the
PATENT ANTI-NERVOUS TRIANGULAR PENHOLDER.
Send for Catalogue and Price List before purchasing.
Manufactory at BURLINGTON, Conn., U. S. A.
F. R. EMMONS, Agent, 132 Duane St., New York.

THE "EAGLE" ANVIL.



LATEST PATENT APRIL 24, 1877.
ESTABLISHED 1843.
SOLD BY

WARRANTED!!
Better than the best English Anvil.

Face in one piece, of BEST TOOL CAST STEEL. PERFECTLY WELDED, perfectly true; of hardest temper and never to come off or "settle." It does not bounce the hammer back, and therefore can do more work with lighter hammer. Horn of tough *untempered steel*, never to break or bend. *Only Anvil made in United States fully warranted as above. None genuine without our trade-mark.*

ANVILS weighing 100 lbs. to 800 lbs., 9 cents per lb., with special discounts to the trade.

SMALLER ANVILS ("MINIMS").

No.	00	0	1	2	3	4
Weighing about	5	10	15	20	30	40 lbs.
	$1.75	2.25	2.75	3.25	4.00	4.50
No.	5	6	7	8	9	
Weighing about	50	60	70	80	90 lbs.	
	5.25	6.00	6.50	7.25	8.00	

New York—RUSSELL & ERWIN MANUFACTURING COMPANY, H. DURRIE & CO., TENNIS & WILSON.
Philadelphia—JAMES C. HAND & CO. Boston—GEORGE H GRAY & DANFORTH.
Baltimore—W. H. COLE & SONS, JOHN R. KELSO, Jr.
Louisville—W. B. BELKNAP & CO. Cincinnati—POST & CO. Cleveland—THE LAKE ERIE IRON CO.

BLACK AND TINNED IRON RIVETS.



HENRY B. NEWHALL 11 WARREN ST. NEW YORK AGENT

W. P. TOWNSEND & CO.,
PITTSBURGH, PA.,
Manufacturers of every description of First Quality
RIVETS.



H. S. MANNING & CO.,
Sole Sales Agents for THE MORSE TWIST DRILL AND MACHINE CO.'S

Manufacture of Patent Machine Relieved Nut, Hand, Blacksmith and Machine Screw Taps, Screw Plates, Tap Wrenches and Patent Relieved Pipe Taps and Pipe Reamers, also of Solid Bolt and Pipe Dies. Furnished in V, U. S. Standard and Whitworth shape of threads.

111 Liberty Street, NEW YORK.

N. Y. MALLET and HANDLE WORKS



Manufacturers of
Calkers', Carpenters', Stone Cutters' Tin, Copper and Boiler Makers'
MALLETS,
Hawsing Beetles, Hawsing and Calking Irons; also all kinds of Handles, Sledge, Chisel and Hammer Handles. Also
COTTON AND BALE HOOKS,
Patented Feb. 13, 1877; a new combination of Hooks.
456 E. Houston St., New York City.

The Mokta Mines.

The *Métallurgie* gives the following description and history of the Mokta-el-Hadid Company, which is the largest organization mining iron ores in Algeria, and virtually controls the trade there. The main deposits of iron ore worked are those of magnetite at Bône, which were discovered in 1843 by M. Fournel. This discovery was the signal for active search being made at Bon-Hamra, Mebondja, Kharézas, and at the northwest of the Fezzara lake, 21 miles from Bône. The principal bed of Mokta-el-Hadid was discovered in 1845 by the engineers of M. J. Talabot, and it became the object of a concession granted to M. J. Talabot in November, 1845. The concessions of Bon-Hamra and Kharézas were sold to M. Talabot, who worked them up to 1864 concurrently with that of Mokta. At this time the manufacture of Bessemer steel raised the Mokta-el Hadid Company to a position of great importance. The new manufacture required choice ore, and the ores of Motka, which, up to that time, had been somewhat neglected in consequence of their high price, found a large and easy outlet at very remunerative prices. The statutes of the private company which worked the mines of Mokta were modified. It was converted into a joint-stock company, and it reserved for itself in its deed of constitution the right to create and establish transport services, blast furnaces and forges, and to work the coal mines intended to supply the iron works.

The Mokta Company, in the course of development, was soon led to establish all those accessory services provided for by the statutes. At first, it provided itself with ample means of transport for its ores, and pushed forward the workings of the mines with such activity that the production was raised from 22,000 tons in 1865 to 137,000 tons in 1866, and in 1869 it had reached to 255,000 tons. During the events of 1870-71 there was a temporary stoppage, but since the war metallurgy has passed through a period of exceptional activity, and in order to satisfy its wants the Mokta Company has had, with redoubled energy, to extend its researches, its works, and its production. Since then, production has reached and even exceeded the figure of 400,000 tons. The ores were required, in great part, in France by the steel works of Creusot, the Loire, the Nord and the Gard. These products are sent from the port of Bône. The ore is carried thither by means of a railway 85 kilometers in length. Special loading apparatus and works for carrying on repairs, &c., have been established by the company, and the cost of transport is thus reduced. The production of Mokta has materially fallen off during the last few years. It only amounted in 1878 to 285,615 tons, while in 1877 it was 360,810 tons. This decrease is to be accounted for by the industrial depression everywhere experienced, which has especially affected metallurgy, and also by certain difficulties experienced in the working of the ore.

One portion of the mines is now worked by subterranean galleries. The company has esteemed it wise to carry on the working by galleries, which is more costly than by open workings, because by this means it will obtain for a long time a very advantageous selling price. Besides the technical difficulties in the way of underground workings, it has been necessary to form and retain a staff of miners, and for this high wages had to be paid and good hygienic conditions had to be secured, in order to retain them at Mokta. One of the chief obstacles to the working of the Mokta beds was the insalubrity of the climate, caused by the vicinity of the Fezzara Lake. In consequence of this difficulty it was found to be necessary to remove the whole staff every evening to Bône by railway. In order to put an end to this serious difficulty, the Mokta Company has received from the Algerian government the concession of the Fezzara Lake, which has an area of 33,000 acres, so that immediate steps may be taken to inclose it. The works undertaken for the improvement of the Fezzara Lake consist of a canal from the center of the lake communicating with the Meboudja River, the Seybouse and the sea. This canal is cut in a sandy clay containing no rock.

Besides the iron mines in Algeria, the Mokta Company possess in France the two contiguous concessions of Cessous and Comberonde, which occupy a workable surface of 4 square kilometers in the coal ground, and comprises in the old schists the Rouvergne Mountain separating the workings of the Grand Combe from those of Bessèges. A private branch line connects the collieries with the Chamborigand station established on the line from Alais to Brioude.

On the 11th of December last, the general meeting of the Mokta Company ratified the proposal to acquire the mines of Soumah and Tafna. This important proposal has been made with the view of acquiring the Tafna ores, the qualities of which complete those of the Mokta, so as to be able to compete easily with foreign ores, which has been difficult with the ores of Mokta alone, on account of their high price. The principal point which has decided the amalgamation is the fear of a competition in Algeria itself. Mokta also finds in this purchase the advantage of a second port, which will put transports out of the reach of any eventuality. On the other hand, the following are the motives which have led the Tafna Company to consent to this amalgamation. The report read at the general meeting of the shareholders of the Soumah and Tafna Mining Company, in April, 1878, insisted on the necessity of coming to some prompt decision to assure the future of the company. The persistence of the depression in trade had reduced the profit upon the output to a little over 1 franc per ton. The report noted that the working could not be rendered remunerative, and could not be further developed before the completion of the port of Beni-Saf.

The condition of the mines is excellent, the beds are abundant, their working is carried on at the surface under very easy conditions, and their distance from the sea is but small; but the Soumah Company is not the only one placed under favorable circumstances. At Bilbao there is also excellent ore at a small distance from the port of embarkation, and Bilbao is nearer to England and Germany than the unfinished and unknown port of Beni-Saf. Mokta has completed and paid for all its great works of installation. It is at the hight of its fortune. It would be under unequal conditions for Soumah to have a fierce competition while it is still in its creative stage, and while the construction of the port of Beni-Saf, on which the future of the company rests, experiences difficulties which, if not insurmountable, are at least extremely costly. According to the information above given, it will be seen that the Mokta-el-Hadid Company represents a considerable industrial power, if the outlets for its products remain sufficient.

The Trade Marks Outlook.

Manufacturers and merchants should not suppose, because the Supreme Court has pronounced the trade-marks act of Congress unconstitutional, that all trade-marks are abolished, or even that the past registrations at Washington are valueless. The gist of the decision is that the devices are to be protected by State courts and laws, not by Congress. But the protection did not originate in the National laws, and will not perish in their failure. Long before any official registration was authorized there was a well-established and tolerably efficient system, loosely called, in popular discussion, protection by the common law. More precisely, courts of equity were accustomed to recognize a manufacturer's or dealer's exclusive right to the trade-mark he had been the first to introduce, and would give him the benefit of an injunction restraining his rivals from imitating it.

A multitude of the more noted goods and wares have had the benefit of this long-known equity doctrine in suits brought independent of any statute. All sorts of articles—beverages, the "Schiedam Schnapps" and the "Old London Dock" and "Club-house" gins; medicines, the "Ferro-phosphorated Elixir," "Vegetable Pain-killer" and "Stomach Bitters;" provisions and household supplies, "Excelsior Washing Powder," "Self-raising Flour" and "Worcestershire Sauce;" perfumery, the "Cocoaine" and "Balm of a Thousand Flowers;" names of newspapers, hotels and establishments like "Christy's Minstrels;" and every variety of pictured label and configured device—have been brought into court, like babies for christening, to have their names adjudged the exclusive property of their makers. Lately a dealer in paper collars wanted the attractive parcel, in the similitude of an ornamented pail, in which he packed them, adjudged his trade-mark; but the judge said, No; if the shape of packages is called a trade-mark, before long some one will claim the exclusive use of brown paper and a bit of twine, and then there will be an end of retail trade. These trials have been known long before any Act of Congress, and have always attracted no little attention in the court rooms from the display of the samples of the rival goods and their showy wrappers and odd labels, which the opposing lawyers produce for inspection. More curious yet have been the suits in which each party claims to be only using his own name; of which class a suit now pending where a father who, two years ago, dropped his baptismal name and adopted (by assent of the legislature, to be sure) his *nom de plume* as a business name, now asks to have his son enjoined from doing business under the like change, because the name has become the father's trade-mark. This whole branch of law is independent of any statute. The vital point in any such controversy has usually been to establish by strict proof the claimant's priority in adopting and introducing his device. If he was first in the market, and the public is liable to be deceived by defendant's imitation, the court will protect him by an injunction.

But this priority is difficult to prove; especially was it so before registration, and when trade-marks grew into use and value in a gradual, indefinite way. Many a complainant lost his case because defendant stoutly swore he used the device equally long. The original and leading object of trade-mark statutes was to relieve this difficulty. By authorizing an official registration the law enabled a manufacturer to secure a permanent legal record of the very time when he introduced his mark and of its precise form. Punishing imitators by specific penalties was a later thought. The Supreme Court decision is understood to defeat prosecutions for penalties, and to deprive United States Courts of the power to grant injunctions, at least when both parties reside in the same State. But States courts will entertain these suits as freely as ever: and whoever sues in a State court will probably find that the registration of his mark at Washington will stand him in good stead as proof that he designed and used it earlier than his competitor. It will not have the support and force of law, but it will be good matter of fact to show that he was first. It will be just as competent as and several degrees more persuasive and convincing than old advertisements, account books and letters, or recollections of witnesses, to prove priority. And upon proof of priority the complainant may have a very helpful and efficient decree from a State court, with or without the aid of State statutes, of which there are now several, and probably will soon be more.—*Tribune.*

Our Trade with Mexico.—The United States Consul at Acapulco, Mexico, under date of September 18, 1879, says with regard to the state of trade on the west coast of Mexico, that in many cases American articles have driven their competitors out of the market. Articles of large consumption are imported from Europe because the manufacturers of the United States do not make similar cheap goods of inferior quality. He thinks the best method of introducing our manufactures is by establishing agencies in the City of Mexico and the adoption of a system of credits of six and twelve months. Our Government may contribute to the development of trade with Mexico by revising the treaty of commerce and making it similar to the one with the Sandwich Islands.

The Iron Age

AND

Metallurgical Review.

New York, Thursday, December 4, 1879.

DAVID WILLIAMS - - *Publisher and Proprietor.*
JAMES C. BAYLES - - *Editor.*
JOHN S. KING - - - - *Business Manager.*

RATES OF SUBSCRIPTION
INCLUDING POSTAGE.

IN THE UNITED STATES, BRITISH AMERICA AND SANDWICH ISLANDS.

Weekly Edition.....**$4.50 a year.**
Issued every THURSDAY morning.
Semi-Monthly Edition.....**$2.30 a year.**
Issued the FIRST and THIRD THURSDAY of every month
Monthly Edition.....**$1.15 a year.**
Issued the FIRST THURSDAY of every month.

TO ALL OTHER COUNTRIES.

PER ANNUM, POSTPAID.

Weekly Edition: $5.00=£1=25 francs=20 marks=12 florins=6 roubles (coin)=25 lire=20 pesetos.
Semi-Monthly Edition: $2.50=10/=12½ francs=10 marks=6 florins=3 roubles (coin)=12½ lire=10 pesetos.
Monthly Edition: $1.25=5/=6¼ francs=5 marks=3 florins=1½ roubles (coin)=6¼ lire=5 pesetos.

REMITTANCES

should be made by draft, payable to the order of David Williams, on any banking house in the United States or Europe; or, when a draft cannot be obtained, in postage stamps of any country.

NEWSDEALERS OR BOOKSELLERS

In any part of the world may obtain *The Iron Age* through the American News Company, New York, U. S. A.; the Wilmer & Rogers News Company, New York, U. S. A., and London, England; or the San Francisco News Co., San Francisco, California, U. S. A.

RATES OF ADVERTISING.

One square (12 lines, one inch), one insertion, $2.50; one month, $7.50; three months, $15.00; six months $28.00 one year, $49.00; payable in advance.

DAVID WILLIAMS, Publisher,
83 Reade Street, New York.

PITTSBURGH.....77 Fourth Avenue
JOS. D. WEEKS, Manager and Associate Editor.
PHILADELPHIA.....220 South Fourth Street
THOS. HOBSON, Manager.
CINCINNATI.....Builders' Exchange
T. T. MOORE, Manager.
CHATTANOOGA.....Eighth and Market Streets
S. B. LOWE, Manager.

BRITISH AGENCY.

The publishers of *The Ironmonger*, 442 Cannon street, London, England, will receive orders for subscriptions and advertisements on our regular terms.

CONTENTS.

First Page.—An English Testing Machine. Scientific and Technical. A Lucky Find. Reckless Coal Miners.

Third Page.—Some Physical Changes in Iron and Steel at High Temperatures. Life of Rails on Illinois Railroads.

Fifth Page.—Census Taking.

Seventh Page.—Iron Manufacture in Central India. Petroleum in Peru.

Ninth Page.—Sir Henry Bessemer at Home.

Eleventh Page.—Gautier Toe Calk Steel. The History of the American Pin Industry.

Thirteenth Page.—The Mokta Mines. The Trade Marks Outlook. Our Trade with Mexico.

Fourteenth Page.—Scotch Pig Iron. Prospects in Spanish American Trade. The Blast Furnaces of the Hocking Valley.

Fifteenth Page.—A Workingman's Views of the Steel Blooms' Decision. Properties of the Alloys of Copper and Tin. Utilization of Gases from the Bessemer Converter. Whitworth's Method of Compressing Steel. Lake Superior Ore Shipments. The Gore (Ohio) Furnace.

Sixteenth Page.—Australian Statistics. The Fannie Furnaces, Shawnee, O.

Seventeenth Page.—Industrial Items. Labor and Wages. The Claim of Capt. Eads' Allowed.

Twenty-first Page.—Trade Report. General Hardware. Iron. Metals. Coal.

Twenty-second Page.—Imports. Exports. Old Metals, Paper Stock, &c. Philadelphia. Pittsburgh. Boston.

Twenty-third Page.—Cincinnati. St. Louis. Louisville. Baltimore. Richmond. Our English Letter. Foreign.

Twenty-fourth Page.—Foreign (Concluded). The Cheat River (Pa.) Mineral Region. The History of the Production of Quicksilver in the United States. Steel-Faced Armor Plates. Is British Trade Reviving? Glass Items. Large Auger Holes.

Twenty-sixth Page.—American Hardware Exhibits at Sydney. French Railway Projects and the Iron Trade. Around the World in 115 Days.

Twenty-seventh Page.—The Iron Age Directory.

Thirtieth Page.—New York Wholesale Prices.

Thirty-first Page.—New York Wholesale Prices (Concluded).

Thirty-seventh Page.—Philadelphia, Buffalo, Chicago and Pittsburgh Hardware and Metal Prices.

Thirty-ninth Page.—Boston and St. Louis Hardware and Metal Prices.

A novel patent decision has just been reached in the United States District Court at Chicago, involving points of considerable interest to manufacturers generally. It appears that William G. Wilson brought suit against the Singer Sewing Machine Company, to test the right of the latter to mark the machines manufactured by them with the word "patented," as their patents, ranging from September 10, 1846, to October 9, 1855, had expired. The law provides that any person affixing to any unpatented article the word "patent" for the purpose of deceiving the public, shall be liable, for every such offense, to a penalty of not less than $100, with costs, one-half of the penalty to go to the person who shall sue for the same. Under this statute it was claimed that the Singer Sewing Machine Company were marking an article which was no longer patented, and that they were liable for 100,000 offences, making a total of $10,000,000. Judge Blodgett, in his decision, held that, although the patents had expired by limitation of law, it could not be said that the "public," who were presumed to know the law as well as the patentee, were deceived by the inscription "patented," followed by the dates of the patent.

Scotch Pig Iron.

The presence of increasing stocks of Scotch pig iron in the principal seaboard markets, and the uncertainty which attends future shipments to this country, has caused some little anxiety among manufacturers as to its probable effect upon the future course of prices for American iron, especially foundry pig, which feels the competition more strongly than the mill irons, and has for some time past manifested a weakness as compared with other grades.

To forecast the effect which importations of Scotch pig will have on prices between this and the opening of spring trade, we must be able to estimate, with at least an approximation to accuracy, the quantity likely to be shipped to the United States. This is a matter of no little difficulty, depending as it does on the course of prices abroad.

The course of the pig iron market in Scotland has been unusually checkered during the year. Makers entered upon the year with a stock of 679,000 tons, or more than two-thirds of one year's production on their hands, with prices at an unprecedentedly low figure, while their main foreign customers were suffering from a long-continued period of depression. The demand increased somewhat on German account, in anticipation of the tariff passed by that country, and during the months of March, April, and May the shipments were very much larger than at any time during the previous two years. As soon as the German tariff went into effect, however, the temporary advances in price were lost and a decline followed, while shipments sank to their former figures. Production had, meanwhile, continued at approximately the same rate, and makers, in their efforts to reduce cost, met with determined opposition on the part of the coal miners; and a large number of furnaces were making or had completed arrangements to blow out or damp down when the sudden improvement of prices in this country, followed by an extended inquiry for foreign, and notably Scotch pig, brought life to the drooping iron industry. Ninety-five furnaces, each producing about 195 tons per week, are now in blast, compared with 88 at the same time a year ago. Prices which averaged 42/8 during January, and fell to 40/6 in July, recovered so that the average for September was 50/1 and 57/10 for October. Shipments which were only 340,000 tons for the first ten months of 1878, were carried to the large amount of 483,000 tons during the same period of this year. Of these, no less than 310,000 tons went to foreign countries, an increase of more than 100,000 tons compared with the preceding year, while the increase of coastwise trade was 40,000 tons.

The production of the Scotch furnaces during this year has not, even if taken at a high figure, been 50,000 tons in excess of last year's output, while the home consumption may, if the decrease of 25,000 tons of Middlesex pig is taken into consideration, be assumed to have remained stationary. It will be seen, therefore, that the stock of Scotch pig has been reduced during the year by about 100,000 tons. A considerable portion of these shipments is naturally due to the demand on American account, which largely, if not exclusively, affected the Scottish market. It is to be noted that deliveries to this country have already begun to fall off, and that a more quiet and steady tone has succeeded the wild excitement of two months ago. Makers, on taking a calmer survey of the situation, are said to feel strongly that the wages of the men, notably the coal miners, were unduly high, and they are represented as being determined to enforce reductions. This, and the fact that the Scotch shipbuilding trade, one of the main home consumers, is becoming much brisker, are the only legitimate causes which may warrant any stiffening in prices. The American demand still remains an important factor, but it should not be forgotten that the stocks of pig iron in Scotland are still extraordinarily high, being more than 500,000 tons.

Mr. John Birkinbine, C. E., at present managing the Pine Grove Furnace, has been elected secretary and treasurer of the United States Association of Charcoal Iron Workers. This association has been rather slow in perfecting its organization, but in this instance it has made a most excellent choice. Mr. Birkinbine is a very clever gentleman, and will have but little difficulty in bringing the association up to a high standard of efficiency. Charcoal is undoubtedly the best of fuels for iron smelting, but it is now made in the most expensive way, and there is great room for economy in its production. Mr. Birkinbine fully understands the importance of this problem, and has contributed not a little to its solution by scientific practice and valuable additions to the literature of charcoal iron making. In his hands the work of the association should be attended with results of immediate and permanent value for all in this branch of the iron business

Prospects in Spanish-American Trade.

The revival in business in the United States and the greater activity in Western Europe, coupled with a speculative movement in merchandise of all sorts, have been productive of a material change in the situation, not only in this country, but also in the West Indies and South and Central America. The planters and miners, as well as the owners of herds of cattle, have suffered from a gradual depreciation in the value of their products in the world's markets during the past few years, quite as much in Spanish America and Brazil as in more northern countries. Since the beginning of 1879, colonial produce of every imaginable kind has risen, in many cases very rapidly, especially in some leading articles, as the following figures will show:

	Jan. 1, 1879. Cents.	Dec. 1, 1879. Cents.	Rise. Pr. ct.
Cotton, middling Uplands	9⅝	12⅜	28
Coffee, fair Rio	14⅞	16¾	11
Sugar, fair to good refining Cuba	6⅔	9	41
Hemp, Manilla	6⅔	9	33
" Sisal	4⅞	7¼	49
Bengal indigo, best	140	170	20
Cochineal, black	55	85	54
India rubber, fine Para	51	95	86
Buenos Ayres Hides	19½	24½	25
Goat skins, Spanish American, best	47½	60	27
Deerskins, best	27½	47½	73
Lake copper	16	21¾	36

The improvement in value in eleven months, it will be seen, has ranged between 11 and 86 per cent. The rise in the producing countries has been as considerable, thus vastly bettering the position of the producer and enabling him to consume American and European manufactures in increased quantities, while imparting a fresh impulse to public improvements, such as railroads, river lines of steamships, harbor works ,&c. The revenue of those countries will become larger under increased imports and exports, as, for example, in Brazil and Cuba, where both pay a duty, and the finances there will be looking up, causing the paper currency to appreciate in gold value.

In order to convey some idea of the enormous amount of produce shipped from Spanish America and Brazil in a single year, we may say that in 1876 they shipped, if we except Peru and Bolivia, $378,000,000 worth of goods. Supposing then that during the next 12 months they ship as much in bulk and get on an average but 20 per cent. more in the world's markets for these goods, their money value will be at least $75,000,000 greater than in 1876, which represents a proportionate increase in purchasing power. This means not only larger and more diversified return cargoes, but a larger ability to pay cash for foreign goods. Both Europe and the United States will gain by this; and unless interrupted by wars, the commerce of Spanish-American countries is likely to be greater in 1880 than at any time since 1873.

Although our export trade has not increased much in amount of late in dealing with our Southern neighbors, it has swelled in bulk, and on the whole it has remained very steady. A comparison is offered us by late tables of the Bureau of Statistics:

EXPORT OF DOMESTIC PRODUCE.

To	1878.	1879.
Great Britain	$393,242,906	$346,485,881
France	56,101,999	88,194,041
Germany	54,111,243	56,164,394
Belgium	22,388,975	27,470,003
Netherlands	13,174,079	13,802,840
Italy	8,736,719	8,047,403
Other Europ. countries	40,566,552	47,057,551
Total	$588,321,579	$587,932,113
Canada	$34,578,874	$27,172,056
Mexico	5,843,609	5,400,380
Central America	1,479,788	1,112,603
British West Indies	7,399,554	6,486,391
Spanish West Indies	12,869,944	13,973,174
Other West Indies	7,821,797	6,853,404
Other countries	1,409,281	1,809,142
Total	$71,383,447	$62,803,150
Colombia	4,552,326	$5 129,648
Venezuela	2,909,023	1,926,923
Brazil	8,610,646	8,106,928
Argentine Republic	2,013,587	2,023,401
Other countries	5,099,727	5,473,691
Total	$24,145,311	$22,730,591
East Indies	$2,393,710	$2,040,756
China and Hong Kong	2,051,856	5,930,954
Other Asiatic countries	3,510,666	3,162,440
Australasia	6,479,193	7,042,875
Sandwich Islands	1,783,596	2,288,178
Total	$34,221,121	$21,064,203
Cape and British West Coast, &c	$3,999,165	$4,257,921
Liberia	104,192	129,790
Total	$4,103,357	$4,387,711
Other countries	595,084	620,974
Recapitulation.		
Europe	$588,321,579	$587,932,113
America	95,528,758	85,533,741
Asia and Australasia	34,221,121	21,064,203
Africa	4,103,357	4,387,711
Other countries	595,084	620,974
Total	$722,769,899	$699,538,742

Next year promises better results for various reasons. In Mexico the discovery of enormously rich silver mines in the Sierra Mojada and other districts is preparing an era of unusual prosperity. The revolutions in Hayti and St. Domingo are just coming to a close, or rather have terminated. The war between Chili on the one hand and Peru and Bolivia on the other, is approaching its end, and all the rest of Spanish America is at peace, with the exception of Cuba, where an attempt is being made to resuscitate the insurrection, but with doubtful success. We believe that our manufacturers have more than ever reason to cultivate with assiduity and an intelligent perception of the requirements of those countries, the trade with Spanish America and Brazil.

Blast Furnaces of the Hocking Valley.

Four years have now elapsed since the first blast furnace was erected in what is variously called the Hocking Valley or the Straitsville district, Ohio. When the unexampled advantages of the district were loudly proclaimed to an astonished world, excitement ran high, men of means eagerly invested in lands, and a number of blast furnaces were built in locations which are probably to-day looked upon as being somewhat rashly chosen, without a sufficiently thorough examination of all the factors upon which success depends. Since the pioneer furnace of the valley, the Baird furnace, located near Gore, was blown in on the 9th of October, 1875, twelve more have been added to the list, partially by removal from other districts. With the exception of the Baird and the Thomas furnaces, blown in at the close of 1876, both of which have been at work steadily, and the Akron, which commenced operations later, the greater number of the stacks have either been idle entirely or have worked at intervals only. Toward the middle of 1877 four furnaces—the Thomas, Baird, Fannie No. 1 and X X—were at work, but in October of the same year two only, the Baird and the Fannie, were running; the Thomas was relining, while two or three others were compelled to blow out, or were kept from commencing operations on account of the lack of water, the danger of drought being apparently one of the drawbacks of the district. In all there have been put up in the new iron region 13 blast furnaces During the prolonged depression which so ruinously affected the iron trade, some of the establishments in the Straitsville district dragged themselves along, while others, after a short attempt, gave up the struggle, and either quietly awaited better times or allowed their property to pass into other hands. We have already mentioned those built previous to 1878, which continued to be producers. The Ogden and the X X closed after a short run; the Winona and the Moxahala worked at intervals, while the Craft was not blown in. The Bessie, the New York and the Monday Creek furnaces started in during the last year and have been going since. Thus it will be noted that the early history of the district has been far from encouraging to its rapid development. All this has been changed by the course of recent events, and we learn that at this time all the furnaces are either in full operation or are preparing to resume work at an early period, so that there is every probability that the region will soon deliver to the markets an amount of pig iron coming near its capacity, which is not far from 100,000 tons per annum. Some of the furnaces, the Baird and Fannie No. 1, are small, producing only 5000 and 6000 tons per annum, the greater number, nine in all, turning out, if working full, from 7500 to 9000 tons each. Only two, the Bessie and the Ogden, built for fast driving, are rated as high as 11,000 and 12,000 tons respectively. The greater number are about 50 feet in hight and have a diameter of bosh varying between 12½ and 15 feet. Some of them are spoken of by eminent blast furnace engineers as designed without a due consideration of fuel economy.

The great advantages of the region are claimed to be the proximity and the excellent quality of its coal, and good transportation facilities which connect with a large and growing market. The enthusiastic predictions of its first promoters in regard to the accessibility, quality and quantity of its ore have, however, been disproved by later experience. The great bulk of the seams opened during the last few years at a large number of localities are narrow, variable in quantity and quality. The limonites, found chiefly near the outcrop, and the carbonates are frequently low in iron, and generally unfavorably high in silica and low in alumina. It has become customary, therefore, with quite a number of furnaces to mix native ores with varying quantities of the aluminous hematites from the Lake Superior region, the proportion being generally 10 to 15 per cent. The times have now come when the new iron region is given a full opportunity, not likely to return, to show not alone its vitality, but the extension of which it is legitimately capable. The experience of many concerns during the first years of its development will, we trust, have produced that caution which alone is the safeguard of prosperity for the district.

The old-rail question, that has been such a specter in iron circles for years past, is like Banquo's ghost—it will not down, even in these times of prosperity. We have referred to the decision of the Secretary of the Treasury admitting a lot of rails at $8, after the appraiser at Baltimore had levied a duty of 70 cents a hundred on them, a decision manifestly in accordance with the law. Now some of the old rails admitted under this decision have turned up in Pittsburgh, and have caused the entire stoppage of boiling pig at one mill—that of Dilworth, Porter & Co. This firm makes spikes, using a continuous mill, the invention of one of the members of the firm, that takes the old rail in at one end and passes out the iron at the other ready for spikes. They have puddled but about six months in the last four years. This action has caused considerable discussion among the workmen in the neighborhood of Pittsburgh, and they threaten to take some action looking to an increase in the duty on old rails; but this will hardly be done, in view of the fact that it will open up the whole tariff question.

The rapid increase of accidents on the railroads of this country is probably closely connected with the sudden expansion of business, which is now taxing the transportation facilities of a large number of the main carrying lines. In many cases the improvement may have taken those in charge by surprise, and may have forced them to place in active service much rolling stock which is defective in consequence of having long been out of use, to defer needed repairs in the permanent way until a more quiet season, and to extend the working hours of experienced employees far beyond the safe limit. These and numerous other consequences resulting from an insufficient preparation for a sudden call upon the railroads, have borne their sad fruit, and while traceable directly only in a few instances to the causes indicated, they probably lie at the bottom of the rapid increase of the destruction to life and property, which must have struck even the least observant. The returns for the month of October as gathered and published by the *Railroad Gazette*, are sufficiently startling, and may well induce railroad managers to heed the warning which they eloquently express. It appears that during October there were no less than 104 accidents, 48 being collisions, and 54 derailments due to a variety of causes, by which 35 persons were killed and 96 injured, the number of disasters being greater by 43 when compared with those of the same month a year ago, although the casualities were greater then, on account of the Wollaston disaster. The present month, there is every reason to fear from the daily reports of the press, will hardly show any considerable improvement, but is to be hoped that strong and persistent efforts will be made to render the causes underlying the facts we have noted inoperative as speedily as possible, lest some terrible calamity brings home to railway managers the absolute necessity of increasing the safety of travel, even though the temporary outlay may be a large one.

Prosperity on the part of the manufacturers and the reluctance of government officials to pay the high prices asked, seems to have destroyed the harmony which has existed hitherto between the administration of the Belgian State railways and their customers, the steel rail mills. The course of the former has considerably shaken the faith of manufacturers in the value and meaning of the system of letting contracts by public proposals. Some time since the government, which stood in need of 12,000 tons of steel rails, asked Belgian mills exclusively to name their prices, but concluded to reject the offers submitted, although they ranged as low as 129 francs per ton. Six weeks afterward the same contracts were to be bid for, but in this instance no exceptions in favor of home industry were made. Meanwhile, however, prices had stiffened considerably, so that no bid was lower than 139 to 140 francs, while the only foreign maker who entered into the competition asked 144 francs per ton. It appears that notwithstanding the parental treatment which they are favored with, the Belgian ironmasters were inclined to rejoice over the fact that the government had thus been taught that it was sometimes a bad policy to hold on for lower prices, when they were startled by the announcement that the contract was withheld for a second time. And now it leaks out that foreign makers quietly awaited the result of the bidding and then hastened to offer the rails at lower prices, which were accepted, with the addition of almost 10,000 tons to swell the amount.

The great success that attended the refunding operations of Secretary Sherman, and especially the ease with which the four per cents. were placed, was supposed to be due to the lack of activity in business and the few favorable opportunities for the investment of capital that presented themselves. Arguing from this view, it was supposed that with the return of prosperity these bonds would go below par. Secretary Sherman argued otherwise, and insisted that when once these bonds were fairly on the market they would never go below par, be the times good or bad. So far the result has justified the Secretary. Times certainly are good; opportunities for investment are springing up on every hand, and yet the bonds are held at 103¼ as we write. It is of course too early to say whether this will continue. It may be that capital is not yet fully convinced that the improvement is permanent, and is not ready to withdraw from bonds with low interest, but security, and to invest in business enterprises that promise greater returns. Should the improvement continue, as it bids fair to do, it will then test the Secretary's prophecy. At present the indications are all in his favor.

The London *Times* is reported by cable to have published the following in its financial article: "Among other evidences of the "reviving capacity of Europe to counteract "the adverse trade balance with the United "States are advices from Germany, which "show that 1,000,000 hundredweights of

"steel blocks have been sold for shipment "to America by Herr Krupp and others. "This operation will be financed through "London." We learn from Messrs. Thomas Prosser & Son, Herr Krupp's agents for this country, that they are not aware that any transactions such as that alluded to in the above is being or has been made. They regard the importation of steel blooms under the existing interpretation of the law as a matter attended with much risk, and profess to have no knowledge of such a step on the part of Herr Krupp. The works at Essen, it is true, have made steel rails for the American market, and this fact may be the basis of the statement which comes to us from London. Since the filling of these orders for rails, Mr. Krupp is said to have entered into contracts which will keep his works busy on rails for almost the whole of the ensuing year, and therefore little importance is attached to the London dispatch, especially as the blooming plant at Essen does not exceed the capacity of the rail rolling machinery.

When, in a recent issue, we expressed doubts as to the practicability of obtaining the information asked for in the census blanks to be distributed among the iron manufacturers, we were not aware that this whole matter had been placed by Gen. Walker in the hands of Mr. James M. Swank, secretary of the American Iron and Steel Association. We knew that Mr. Swank had been approached on the subject, but were not aware that he had decided to do more than prepare a general statistical report on our iron industries, to be embodied in Gen. Walker's report. For many reasons we are glad that Mr. Swank has consented to undertake the work. He is eminently fitted for it; he enjoys the confidence of the iron trade, and is already in possession of much of the information needed. Few, if any, in the trade will object to giving Mr. Swank any information he calls for, knowing from experience that he is a safe custodian of confidences. We still think that the blanks call for too much information, but we have no doubt that in Mr. Swank's hands a great deal more will be obtained than would be given direct to the government office. We congratulate Mr. Swank on the official recognition of his abilities as a statistician, which his selection for this duty implies.

With the exception of a few cargoes to be sent forward from the Escanaba mines, the season for the shipments of ores from the Lake Superior mines has closed. A study of the figures which we give elsewhere, on the authority of the Marquette *Mining Journal*, is of much interest, showing, as it does, that the shipments by lake have increased by 234,241 gross tons, of which almost two-thirds, or 152,861 tons is to be credited to the mines of the Menominee range. Escanaba, it would appear, is very rapidly gaining as a shipping port, having outstripped its rival, Marquette. While these evidences of returning activity are gratifying, it is to be hoped that the mines of the Lake region will find it possible, by energetic and united action, to reduce the amounts of high grade ores now coming from abroad.

A Workingman's Views of the Steel Blooms Decision.

PITTSBURGH, PA., Dec. 1, 1879.

To the Editor of The Iron Age.—DEAR SIR: The question of steel blooms, as discussed in your interview with Judge French, is one certainly well worthy the consideration of all steel manufacturers. But that Judge French should, without any knowledge of the subject, render a decision at all, is to my mind rather inconsistent with the duties of such a responsible office. When the national prosperity of a country in one of its greatest resources and developments is at stake, surely the greatest care should be exercised before passing judgment.

Whether the manufacturers, unsolicited by Judge French, gave him the facts and information which the case demanded, presuming that he knew at least something of the subject in hand, is not in my opinion a mark of very great ingenuity on his part; and I venture to say he would not have risked his reputation as a lawyer in going before any jury to plead a case with the lack of information on the subject he has manifested in this matter. I know nothing personally of Judge French, either as to his ability as a lawyer or a public servant, but I maintain that in the exercise of his judgment when the latter is interested, he should have given the subject even more careful consideration than had it been a personal matter,

New York and Pennsylvania are prolific of iron and steel manufacturing establishments, so that the information could have been had either by a personal visit of Judge French or by a disinterested deputation appointed by him, accompanied by two good reporters. Such a visit to any iron and steel works, where Bessemer steel is made in addition to merchant iron, or a visit to several of each kind of works, with a free and unlimited permission to talk with both manufacturers and employees, would have been not only highly interesting to the public, as displaying that business ability and information of which some of those in authority think the workingmen are absolutely deficient, but would have made practical and easy the solution of the question in hand.

Yours respectfully, A WORKING MAN.

The miners at Braidword, Ills., are not profiting much by the advance. They made a contract some time since, which still has some months to run, and though they have requested an advance, it has not been conceded.

Properties of the Alloys of Copper and Tin.

TESTS BY TORSIONAL STRESS.

After breaking the pieces by tensile stress as heretofore described, the square ends of the fractured pieces were turned into pieces suitable for tests by torsion. The standard shape and size of these torsion pieces was that of a piece 3 inches long and 1 inch square in section, turned in the middle for a length of 1 inch to a diameter of 0.625 inch, leaving a small fillet where the turned portion joined the shoulder. The pieces which were too brittle to be turned in a lathe were shaped by grinding with an emery-wheel in an apparatus designed for the purpose.

The pieces from each bar were marked with the letters A, B, C, D, in addition to the number of the bar, these letters corresponding with those on the tension pieces, A being the piece nearest the top of the bar, B nearest the bottom and C and D from the middle.

On comparing the autographic strain diagrams of the torsion tests with plotted curves of tests by transverse and tensile stresses, made by plotting the figures of the records of the latter, it was seen that with each bar there is a very marked similarity in the shape of its curves produced by each of the three methods of test. The ductile materials, by either method of test, give curves which become nearly parallel to the axis of the abscissas long before its fracture, while the brittle materials give curves in which the reversed curve, concave to the axis of abscissas, never takes place.

Tests by Torsional Stress.—First Series.

Number.	Mean Composition by analysis. Copper.	Tin.	Angle of torsion. Degrees.	Torsional moment. Maximum. Foot lbs.	At Elastic Limit. Foot lbs.	Resilience. Foot Pounds.
1*	100.00	....	40.5	63.66	33.17	37.71
2*	97.89	1.90	317.5	150.46	37.28	572.51
3	96.06	3.76	247.4	156.93	52.99	599.96
4	92.11	7.80	125.6	100.01	61.36	277.22
5	90.27	9.58	114.5	175.28	72.52	274.60
6	87.15	12.77	100	182.32	81.32	253.61
7	80.95	18.84	16.3	190.15	118.51	35.59
8	76.63	23.24	3.4	122.13	122.13	3.72
9	69.84	29.88	1.5	17.58	17.58	0.63
11	65.33	34.47	0.75	16.44	16.44	0.36
12	62.31	37.35	1	7.06	7.06	0.25
13	56.70	43.17	1	8.94	8.94	0.31
14	51.62	48.09	1	13.54	13.54	0.19
15	47.61	52.14	1	14.87	14.87	0.28
16	44.52	55.28	0.92	23.25	23.25	0.53
17	42.38	57.30	1.65	28.11	28.11	0.60
18	38.37	61.32	1.70	23.46	23.46	0.42
19	34.22	65.80	1.87	16.56	16.56	0.31
20	25.85	73.80	2.34	20.97	20.97	0.76
21	23.35	76.29	4.5	41.50	41.50	2.25
22	20.25	79.63	5.69	22.93	21.32	2.07
23	15.08	84.62	24.83	22.80	17.16	9.05
24	11.49	88.47	61.75	23.24	15.28	23.45
25	8.57	91.39	131.75	22.98	14.51	43.85
20	3.72	96.31	220.5	22.83	11.74	76.88
27	0.74	99.02	387.5	18.29	8.20	90.40
28	0.32	99.46	535.3	16.47	6.89	125.99
29	....	100.00	556.75	12.75	5.78	105.45
30	100.00	....	153.	143.24	50.63	320.35

* Nos. 1 and 2 full of blow-holes.

Referring to the above table, it will be seen that the relative strength and ductility of the various bars in the series, as found by the tests by torsional stress, agree closely with the tests of the same bars by transverse and tensile stress. The copper bar No. 30 shows much greater strength and ductility than No. 1, as would be expected from the spongy structure of the latter.

There is a regular increase of strength in the series to No. 7 (80.95 copper, 18.84 tin), as shown by the other tests. The strength then rapidly decreases to No. 12 (62.31 copper, 37.35 tin), the weakest of the series. The same general weakness and irregularity are observed in the bars from No. 12 to No. 20 (25.85 copper, 73.80 tin), as was shown in the tests by tensile and transverse stress. The second maximum point of strength is again given by No. 21 (23.35 copper, 76.29 tin), from which point the strength regularly decreases to No 29 (all tin).

TESTS BY COMPRESSION.

A number of pieces were taken from the broken tension test specimens, and turned into small cylinders to be tested by compressive stress. The size of these pieces was very accurately 2 inches in length and 0.625 inch in diameter. The ends were carefully made plane surfaces, perpendicular to the axis of the cylinder. Nos. 1 D, 25, 26, 27 and 28 were tested in a compression attachment to the Riehlé testing machine. The other compression tests were made on the testing machine of 100,000 lbs. capacity, in use by the Ordnance Bureau, U. S. A., at the Army Building, New York city. In this machine this stress is applied by means of a lever operated by hand, through a system of spur and screw gearing, and is measured by a combination of levers. A similar machine, designed by Major Wade, is described in a Report of Experiments on Metals for Cannon by officers of the Ordnance Department, U. S. A., 1856.

Tests by Compressive Stress.—First Series.

No.	Composition by Analysis. Copper.	Tin.	Load per sq. inch, causing a compression of 20 per ct. Lbs.	Maximum load per square inch. Lbs.	To'l compression produced by maximum load. Per cent. of original length (2 in).	Crushing strength per square inch.
1	100.00	....	51,000	74,968	44.80	39,000
1 D	100.00	....	58,671	78,228	43.39	45,500
2	97.83	1.92	46,000	46,253	36.80	34,000
3	95.96	3.80	52,152	52,152	30.25	42,048
4	92.07	7.76	65,000	84,095	45.25	42,000
5	90.43	9.50	60,000	61,930	33.55	38,000
6	87.15	12.77	80,000	89,636	38.60	53,000
7	80.99	18.92	103,489	107,189	20.30	78,000
8	76.60	23.23	....	114,081	9.05	114,081
9	69.90	29.85	....	146,676	3.50	146,676
11	65.31	34.47	....	84,747	2.85	84,747
12	61.83	37.74	....	39,114	1.75	39,114
15	47.72	51.99	....	84,747	2.15	84,747
16	44.62	55.15	....	35,854	0.66	35,854
17	38.83	60.79	....	39,114	2.05	39,114
18	38.37	61.32	....	29,335	1.45	29,335
19	34.22	65.80	....	19,557	5.53	19,557
20	25.12	74.51	17,927	17,927	28.05	17,927
22	20.21	79.62	16,297	16,297	20.05	16,297
23	15.12	84.58	6,519	9,462	51.35	6,519
24	11.48	88.50	10,104	14,016	50.40	10,104
25	8.57	91.39	....	9,778	5.58	9,778
26	3.72	96.31	6,519	9,778	31.22	9,778
27	0.74	99 02	6,519	9 778	36.32	9,778
28	0.32	99.46	6,519	9,778	37.60	9,778
29	....	100.00	6,519	7,497	44.45	6,400
30	100.00	....	58,080	71,729	32.10	42,000

Nos. 1 to 7-inch, flattened.
Nos. 8 to 22-inch, crushed.
Nos. 23 to 30-inch, flattened.

The more ductile alloys, No. 1 to No. 7 (all copper to 80.95 copper, 18.84 tin), and No. 23 (15.08 copper, 84.62 tin) to No. 30 (all copper) were not crushed or broken by any stress which could be applied to them, but either bent after sustaining a certain degree of compression or, retaining a vertical position, increased in diameter as the decrease in length took place and gradually flattened. Some of the pieces were in this manner compressed to half their original lengths, the resistance to further compression always increasing. When the bending took place the piece under compression would in some cases take such a position as to gradually diminish in resistance to stress, the pressure plates touching only on the edges of the upper and lower surfaces of the piece. The actual "crushing strengths" of the ductile metals, therefore, cannot be stated; but for the purpose of comparison the crushing strength is assumed to be that which corresponds to a compression of one-tenth of the original length. In the above table, therefore, the figures in the column headed "crushing strength" represent, in the cases of ductile metals, the loads per square inch necessary to produce compression of 10 per cent. of the original length.

All the brittle alloys, and some of those possessing certain limited amounts of ductility, No. 8 (76.64 copper, 23.24 tin) to No. 18 (38.37 copper, 61.32 tin) inclusive, broke suddenly when their maximum resistances were reached, and the figures for their crushing strengths are, therefore, the actual values. In these, the figures for "total compression produced by maximum load" are the calculated compressions at the instants of the sudden breaking. In the cases of the others, the figures in the same columns are the total compressions which were actually given to the pieces without breaking them, and include the shortening of the piece by banding, but are not the total amounts of compression which might have been produced if the test had been continued further. The loads per square inch, producing a compressions of 20 per cent., is also given in the table for purposes of comparison.

By inspection of the table and comparing the results with those of the transverse, tensile and torsional stresses, some important facts are observed. Assuming, as already stated, that the crushing strength of a ductile metal is the load necessary to produce a compression of one-tenth of the original length and that of a brittle metal is the load actually causing fracture, it is seen that the maximum and minimum compressive strengths are not found in the compositions which exhibited maximum and minimum strengths by the other three methods of test. It has already been observed that the relative strengths of the various alloys, as shown by the other three methods of test, are similar. This is not the case with the compressive tests. The maximum crushing strength is given by No. 9 (69.84 copper, 29.89 tin), which gave results much nearer the minimum under the other forms of tests. The minimum crushing strength is found in tin, which was superior to several of the brittle alloys in other methods of test, and which alloys greatly surpassed it in tests by compression. It appears that the resistance to compression has an entirely different nature from resistance to tension, and that the two qualities have no relation to each other.

The compression pieces, No. 1 (all copper) to No. 5 (90.27 copper, 9.58 tin), and No. 30 (all copper) give results very nearly alike, varying from 34,000 to 42,000 lbs. per square inch to produce a compression of one-tenth of the original length. From No. 6 (87.15 copper, 18.84 tin) to No. 9 (69.84 copper, 29.89 tin) there is a rapid increase up to 146,676 lbs. per square inch. From this point a decrease takes place to No. 29 (all tin). This decrease is somewhat irregular, No. 11 (65.34 copper, 34.47 tin) and No. 15 (47.61 copper, 52.14 tin) giving a crushing strength of 84,747 and No. 12 (62.31 copper, 37.35 tin) only 39,114 lbs. It would be necessary to make a greater number of tests before attempting to explain this irregularity, but it does not seem improbable that it may be a peculiarity of these compositions, since No. 12 was very different in color from both No. 11 and No. 15, and had the highest density of the series, a density much higher than that of No. 15. It may be that an alloy of nearly the composition of No. 12 represents a second minimum point of compressive strength in the curve, and an alloy near No. 15 may give a second maximum point, as No. 21 (23.35 copper, 76.29 tin) gave a second maximum by the other tests and No. 29 (all tin) a second minimum. It will require further tests, however, to settle this point definitely.

(To be continued.)

Utilization of Gases from the Bessemer Converter.

To the Editor of The Iron Age: It is a well-known fact that the pioneer who discovers and discloses unknown physical laws, or exhibits a new property of matter, or invents new and useful processes and devices for manipulating them, seldom ever reaps a commensurate profit for his ingenuity. Many of the greatest inventions of the past were allowed to remain in the Patent Offices unappreciated until the inventors had passed away. This is fully true in the case of metallurgical processes, and the machinery for manipulating them, as the manufacturers of metals as a class are very conservative, and are not often willing to engage in costly experiments.

Thirty years ago I invented a new process (and patented it) in the metallurgy of iron, but I failed to get a single manufacturer to introduce it. The patent expired several years ago, without bringing me one cent of profit, but if it was in existence today I could make it pay me at least $25,000 per annum. This is not the only case in which I was ahead of the public demand. In 1865 I constructed and made experiments with a lime-lined converter, for the purpose of dephosphorizing and desulpherizing iron and steel, and covered the apparatus in 1866 in the United States by two patents, and in England and France by one patent in each country. Full drawings and a detailed working description of it may be had from the offices, or seen in the official reports of 1866. Sidney G. Thomas, of England, perceived the advantage of a lime lining in 1878, and, as I am recently informed, alleges that I obtained my ideas from him. Could I not with more assurance say that Mr. Thomas obtained his ideas from my drawings and specifications published in 1866? But no! I make no such charge.

If any person interested will refer to my patent No. 55,710, June 19, 1866, he will find in the drawings attached and forming a part of said letters patent, two converters provided with gas conduits leading from the mouth of each converter to the melting cupolas, for the purpose of utilizing the heat blown out of the converters for melting the charge in the cupolas. In connection with this plant, not shown in the drawings, I had a hot-blast apparatus on top of the cupolas, for the purpose of producing a hot blast by waste gases for use in the converters or in the cupolas. The hot-blast apparatus is still in good order and may be brought into court if needed. I mention this to show that the improvement, which according to *The Iron Age*, Nov. 20, has been successfully introduced by Messrs. Brown, Bayley & Dixon, of Sheffield, England, is credited to me in the British, as well as the French and United States Patent Office, in 1866. This British patent has a seal attached, not quite as large as the bottom of a 7-ton converter, and I really think that if the wax the seal was made of had been put into candles my British friends might have seen that it is their duty to give me credit for my inventions as they are due to me.

JACOB REESE.

PITTSBURGH, Nov. 24, 1879.

Whitworth's Method of Compressing Steel.

Sir Joseph Whitworth, in a petition for an extension of his patent for compressing steel, makes a series of interesting statements which throw some light on the history of his process and the difficulties which had to be overcome in developing it.

Owing to the trouble experienced in obtaining sound ductile steel, particularly for the manufacture of small arms and ordnance, he was led to make very many experiments upon various kinds of steel, but he found that there was very great difficulty in obtaining steel that could with confidence be depended upon as possessing the combined strength and ductility that he required; he was, therefore, obliged to turn his attention to the manufacture of steel, so that he might be sure of obtaining it of the required quality. This he had done more particularly since the year 1863. In 1863 he commenced a series of elaborate experiments for the purpose of accomplishing this object. Prior and up to that year it had been considered that the only practicable mode of properly working steel so as to render it close, strong and ductile, was to compress it when in the solid state by expensive machinery. In 1865, Sir Joseph Whitworth found that he could obtain the desired result by means of his improved process of treating iron and steel, in which a high degree of pressure was applied to the fluid metal in the mold, and was continued until it had passed from the fluid into the solid state. In the course of these experiments Sir Joseph Whitworth ascertained that cast iron, which was the material theretofore most commonly used in constructing the molds, was incapable of sustaining the high degrees of pressure which he found necessary. The invention, on being practically tried, proved entirely successful, as it enabled him to produce with certainty sound steel, possessing the required ductility and strength. Sir Joseph Whitworth, having obtained his letters patent, proceeded at once to bring the invention into practical operation, but he met with unexpected difficulties, for the apparatus, which was strong enough to be used in making the small quantities of steel which were sufficient for experimental trials and for testing the practicability and value of the invention, was found wholly incapable of bearing the great pressure requisite for the production of large masses of steel. After many failures in getting proper steel on which to work, he ascertained that the only material which could be made with the requisite soundness, so as safely to be submitted to the necessary strain for manufacturing large masses of steel according to its process, was the steel itself so made. In order to obviate these difficulties and to manufacture the apparatus required to carry his invention into practical operation, he was obliged to make, in the first instance, comparatively small presses of his compressed steel, and, employing them in the production of further quantities, to gradually increase the size of his apparatus, and to build up and extend his process of manufacture, until it could be employed with safety and certainty in the production of articles of any required size, such as propeller shafts and cylinder linings for the largest marine engines, ordnance of large caliber and torpedo chambers. At last he made what was known as the 8000-ton press. Before he was able to use his own material (the fluid-compressed steel), the workmen always "bolted" when the pressure was put on, and they ran out of the steel house for fear of accidents. His invention was also applicable to cast iron, but it was more advantageous to compress steel than cast iron. Compressed steel was made down to 30 tons strength and 40 per cent. ductility.

As we have already had occasion to state in *The Iron Age*, Sir Joseph Whitworth's petition was favorably answered, an extension of the patent for five years being granted.

Lake Superior Ore Shipments.

The mines of the Lake Superior region produced and shipped by lake the following quantities of ore for the season of 1879, as given by the Marquette *Mining Journal:*

MARQUETTE.

Mine.	Gross tons.
McComber	14,530
Manganese	10,815
Rolling Mill	250
Cleveland	82,837
Lake Superior	109,884
Saginaw	246
Winthrop	18,985
Humboldt	18,025
Edwards	5,128
Republic	135,151
Keystone	3,995
Champion	94,059
Marquette	1,019
Berringer	7,636
Euclid	3,612
Albion	3,244
Total ore from Marquette	509,416

L'ANSE.

Michigamme	38,381
Spurr	408
Total	38,789

ESCANABA.

Angeline, Specular	19,706
Angeline, Hematite	4,773
Barnum	24,015
Bessemer	20,402
Breen	943
Cambria	6,729
Cheshire	17,985
Cleveland	23,580
Cleveland Hematite	14,598
Cyclops	39,799
Edwards	303
Emmett	22,084
Goodrich	3,992
Jackson	66,572
S. Jackson	21,322
Foster	4,364
McComber	11,907
Wheat	851
Richmond	1,088
Saginaw, Section 4	12,639
Howe	492
Michigamme	18,556
Mitchell	9,883
National	18,642
New York	56,288
New York Hematite	2,609
Norway	65,520
Palmer	23,053
Quinnesec	38,101
Rolling Mill	1,145
Saginaw	38,436
Salisbury	30,293
Superior, Hard	46,166
Superior, Hematite	4,115
Vulcan	45,830
Winthrop	7,272
Chicago	949
Section 12	5,027
Orion	409
Curry	12,803
Excelsior	3,673
Total	755,274

The following summary and the corresponding figures for the last year will show how great the development was during the present season:

Where from.	1878.	1879.
Escanaba	500,196	755,274
Marquette	526,656	509,416
L'Anse	42,186	38,789
Total	1,069,438	1,303,679

The Gore (Ohio) Furnace.

One of the pioneer furnaces of the Straitsville district was the "Gore" Furnace, of the Thomas Iron Works, Gore, Ohio, which was built in the year 1876. We are indebted to Mr. J. F Wheeler, superintendent, for the following information in regard to its history and its present work: It went into blast December 12th, 1876, continuing in blast until August 1st, 1877, when it was blown out for repairs, which were completed by November 12th of the same year. The furnace was once more blown in, and has been in blast continuously since. The first blast of seven and one-half months was not satisfactory, from a lack of knowledge of the materials to be worked, the product being principally iron of a very weak nature. Since blowing in November 12th, 1877, the make has been a very good quality of iron, No. 1 Foundry principally, the nature of which is neutral, with a tendency to red shortness. It is used by nearly all classes of consumers, the iron being strong, soft and fluid. The average daily product up to the present is over 21 tons, three-quarters of which is No. 1 foundry. The furnace is 47 feet high, 12 feet 6 inches bosh, 7 feet at top; the hearth is 6 feet high, 6 feet in diameter at the top and 5 feet at the bottom. It is blown with five tuyeres, placed at a hight of 45 inches from bottom, the pressure averaging 3¼ lbs. A temperature of blast of 850 degrees is produced by two Thomas iron stoves, with 18 pipes in each. Two of the same size are now building. The average charge is about as follows:

	Lbs.		Lbs.
Coal	1800	Lake ore	300
Native ore	1110	Limestone	675

Native ore beds, known as the Baird or Limestone ore, are within 1¼ miles of the furnace, the thickness of the vein being 8 to 12 inches. The coal vein from which the furnace draws its supplies is the Straitsville or "great vein," the thickness of which varies from 9 to 11 feet. Of this but 7½ feet is used, the top being left on account of the heavy percentage of ash in it. From 20 to 25 per cent. of lake ores (red-short ores) is used by the furnace.

The following analyses of materials used will serve to indicate their nature:

Analysis of Calcined Baird or Limestone Ore, made by Prof. Wormley.

Iron sesquioxide	66.86
Silicic acid	21.64
Manganese oxide	1.10
Alumina	2.35
Lime	1.75
Magnesia	1.07
Phosphoric acid	0.735
Sulphur	0.29
Water combined	4.05
Total	99.845
Metallic iron	46.8

Partial Analysis by Prof. Jno. A. Church of Sample "Gray" Baird or Limestone Ore, as Found Under Considerable Cover. Raw Ore.

Metallic Iron	29.7
Silica	15.5
Alumina	7.4
Lime and magnesia	4.70
Phosphorus	0.14

Analysis of Columbus Limestone by Prof. Orton.

Carbonate of lime	94.80
" Magnesia	1.21
Alumina and iron	.80
Silicious matter	3.20
Total	100.01

Proximate Analysis of Coal from Sands Bank, in Perry County, Ohio. (Great Vein Coal), Upper Vein, 2 ft.; Middle, 3½ ft.; Lower, 3 ft.

	Average of samples.	Upper No. 1.	Middle No. 2.	Lower No. 3.
Specific gravity	1.2833	1 3060	1.2840	1.2600
Water	5.79	5 10	5.55	7.26
Ash	4.95	5.03	5.72	4.11
Volatile matter	35.19	35.20	35.55	34.77
Fixed carbon	53.88	54 61	53.18	53.84
	99.81	100.00	100.00	99.98
Coke	58.83	59.64	58.90	57.95
Sulphur in coal	.9156	.5253	.97070	1.2508
" coke	.2588	.2941	.22130	.2609

Australian Statistics.

The rapid growth of the Australian colonies should be watched with much interest by Americans. Speaking the same language, off-shoots from the same English stock, both looking forward to years of development, Australia and the United States will in all human probability knit closer and closer in commercial relations. It is too soon to predict a separation for Australia, and yet it is possible that some day we shall greet a sister republic, or perhaps a separate government modeled after that of Great Britain. We, of California, feel intimately connected with the industries and resources of Australia and the contiguous islands. In order to give a clear view of the present condition of these colonies, we synopsized from the recent report of the Registrar-General of New South Wales the following figures and statements from the census of 1878, bringing the view of colony affairs down to December 31st. The total population of the Australasian colonies is 2,603,122, divided as follows: New South Wales, 693,743; Victoria, 879,442; South Australia, 248,795; Queensland, 210,510; Tasmania, 109,947; Western Australia, 28,166; New Zealand, 432,519. Western Australia, 28,166; New Zealand, 432,519. Western Australia is largely unexplored, and contains much worthless land. Considering the population, the enterprise manifested by our Australian neighbors is worthy of the highest commendation. Their school system, as evinced by the magnificent annual reports of that department, is completely successful, and in some respects superior to our own. The governments of the larger colonies have provided amply for botanic gardens, scientific reports, and researches of a very complete character.

At Melbourne, Brisbane and other points, much work of this kind is constantly being done. The total revenue from these colonies was in 1878, £17,057,316, and the total public debt was £67,506,511, of which sum New Zealand's debt was nearly one-third, although her population was only one-sixth. The present revenue derived from New Zealand is about one-fourth of the total revenue from the colonies. The total value of the imports of all the colonies was over £50,000,000, and the value of the exports was £44,000,000. Not having yet established manufactories to any great extent, exports are mainly of raw materials, and imports are mostly of manufactured goods from England and America. The trade in agricultural implements and household conveniences is settling largely toward American goods. A paragraph in the *Queenslander* of a recent date says that the British manufacturers of edged tools are gradually but surely surrendering their prestige in branches of trade in which they were accustomed to consider themselves supreme. It is even stated that on an average the implements of American manufacture sell for three times the English article, and more readily. In silverware, also, the American manufacturers are pre-eminent, but pottery and glassware are still made best by the English. The largest trade, proportionately, is with South Australia, and next with New South Wales.

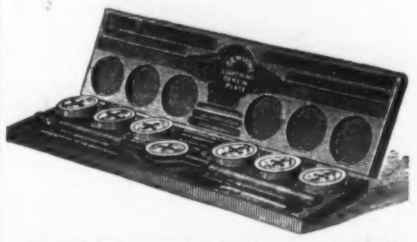
The trade of Tasmania is the least, comparatively speaking, of any of the colonies. Last December there were 25,970 miles of telegraph lines in the colonies, of which New Zealand had 3434 miles, and Tasmania 682 miles, the balance being on the Continent, New South Wales, with over 7000 miles, having the most. It is evident that most of these lines earned more than one line, as the total number of miles of telegraph wire is given at 40,501 miles. There are also nearly 2000 miles of lines now in progress of construction. The amount of railroad now in use sums up 4000 miles, and 1159 miles are being constructed. Of railroads already built New Zealand shows the greatest number of miles, which is evidently one of the reasons why her population has increased so steadily, and also accounts in part for her greater debt. Next to New Zealand, Victoria has done well in railroad building. Western Australia has only 48 miles of railroad. When we examine the agricultural returns we find that, in round numbers, out of 6,500,000 acres under cultivation last year, the New Zealanders cultivate 2,000,000 acres, and South Australia tills as much more. Victoria comes next with 1,500,000 acres, New South Wales shows 600,000 acres, and the three colonies of Queensland, Tasmania and Western Australia have but 300,000 acres under cultivation. If we now turn to live stock statements, we shall find that New South Wales, Victoria and Queensland are the leading colonies. The sheep interests of New Zealand are large. The total number of houses in the seven colonies was 1,009,878; the total of horned cattle was 7,402,659; the total of sheep was 61,066,100, and the total of pigs was 815,110.

The Fannie Furnaces, Shawnee, O.—We are indebted to E. S. McKinlay, of the Licking Iron Company, Shawnee, for the following details on the furnaces belonging to that company: Fannie Furnace No. 1 was blown out in Newark, April 10, 1876, and was moved to Shawnee and blown in September 12, 1876. It has a 12-foot bosh, is 47 feet high, and 6 feet 6 inches in diameter at top, and 6-foot hearth. The furnace continued in blast until February 2, 1878, when it was blown out for want of stock, the roads being so bad from a wet winter that it was impossible to haul ore to supply two stacks. The shell of No. 1 Furnace was taken down during the summer of 1878 and enlarged, so that it is now lined up to 13-foot bosh, 9 feet diameter at top, and 7 feet diameter of hearth, and has just gone into blast as remodeled. Fannie Furnace No. 2 was built during the summer of 1877, put in blast October 10, 1877, and is yet in operation. The U-pipe stove is used, with 40 pipes in one double oven and 18 in each of two others, which produced blast heated from 700 to 900 degrees. So far Iron Point ore, which is taken from mines located 1½ miles from the furnaces, has been used entirely, while coal and limestone crop out at the furnaces. The quality of iron is similar to that of Scotch pig, the yield having been about 90 per cent., foundry grade.

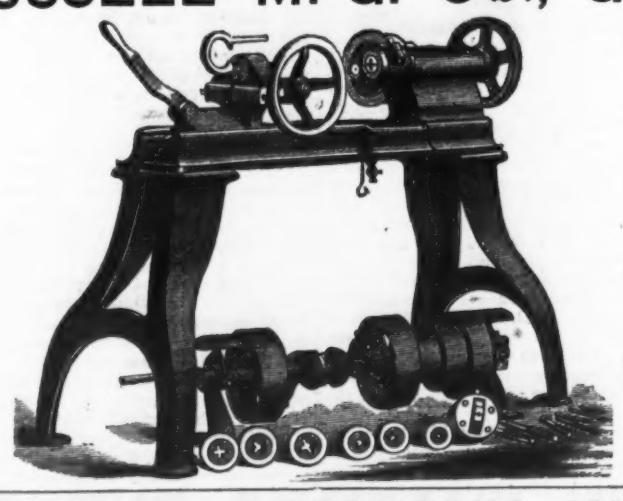
WILEY & RUSSELL MFG. CO., Greenfield, Mass.

Lightning Screw Cutting Machinery and Tools.

Bolt Cutters for hand or power.
Screw Plates cutting from wire sizes to 1½ inch.
Bit Brace Taps and Dies.



Special Screw Plates for the use of Model Makers, Carriage Makers and Blacksmiths.
Bit Brace Reamers for use in wood and iron.



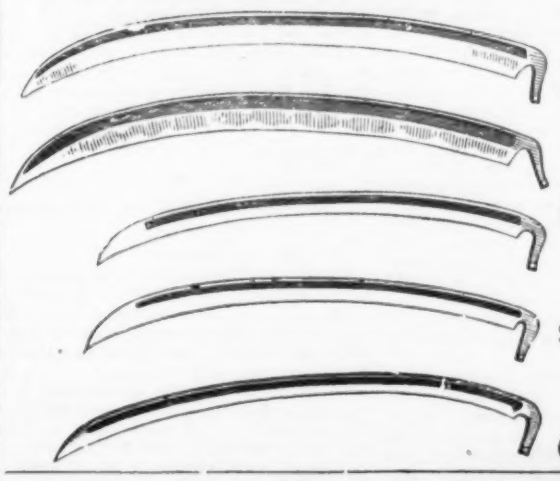
Green River Drills.
Green River Tire Benders.
Green River Tire Upsetters.
The Green River Tire Measuring Wheel.



Horse Shoers' Vises, &c., &c.

Send for Illustrated Price List.

BEARDSLEY SCYTHE COMPANY, West Winsted, Conn.



Manufacturers of the well-known brands of

German Steel, Cast Steel and Silver Steel Grass Scythes.

ALSO THE

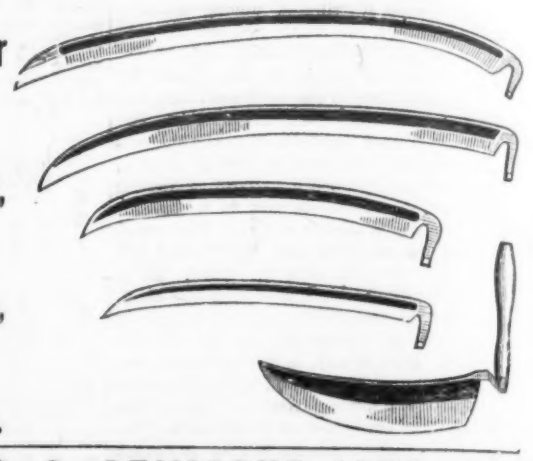
Clipper, Emperor, Beardsley's Golden Trimmer, Conqueror, Dutchman, Waldron, &c.

ALSO

Silver Steel, Clipper & Harvest Victor Grain Scythes,
Common Pattern & Spear Point Hay Knives.

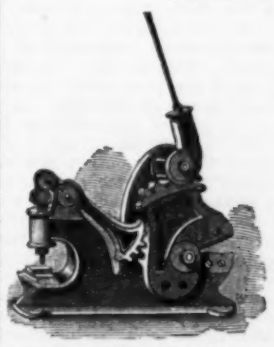
ALSO

Corn Knives, Bush & Weed Scythes.

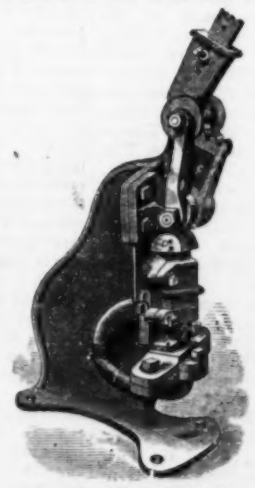


G. B. WALBRIDGE,

No. 103 Chambers St., New York.



Combination Punch and Shears.
Cuts Round and Flat Iron.



Punch ½ to ⅝ in., ⅛ in. Plates.



Shears for Plates and Bars

SOLE MANUFACTURER OF

Lyon's Patent Hand and Power

DRILLS, SHEARS AND PUNCHING PRESSES.

For Workers in Iron and Steel, adapted to all trades.

Send for circular and prices.

THE TURNER & SEYMOUR MFG. CO.,

MANUFACTURERS OF

Upholsterers', Stationers', House Furnishing and Fancy Hardware

AND NOTIONS.

Fancy Brass Goods and Iron Castings to Order.



Picture Nails, Knobs and Hooks, in great Variety. Gilt and Tinned Picture Wire, Twisted and Braided.

American Cast Shears,

Sold by Hardware and Notion Dealers everywhere.

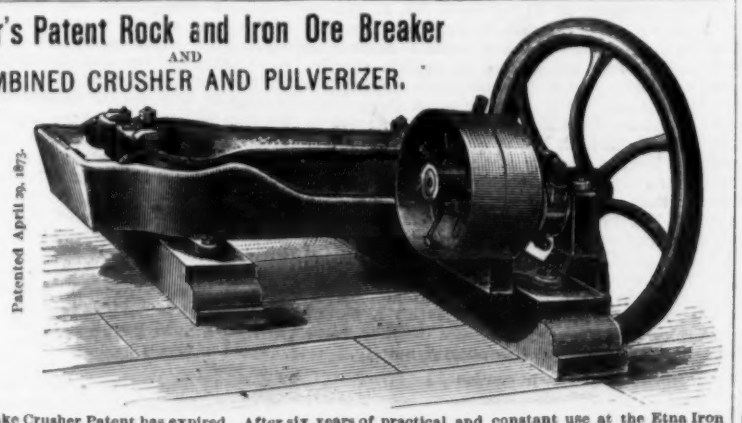
Also Manufacturers of Shade Fixtures and Trimmings, Ink Stands, Twine Boxes, the Celebrated "Family" Egg Beater, Nutmeg Graters, Escutcheon Pins, Curtain Rings, &c., &c.

FACTORIES, Wolcottville, Conn.

Forster's Patent Rock and Iron Ore Breaker

AND

COMBINED CRUSHER AND PULVERIZER.



The Blake Crusher Patent has expired. After six years of practical and constant use at the Etna Iron and Nail Works, Bridgeport, Ohio, to which Company all desiring information are respectfully referred, the Forster Crusher has demonstrated its superiority. It requires but one-third the power to run it. It requires less than one-half the expense to keep it in repair. It is the simplest machine ever made to accomplish the same amount of work. The saving in steam to run it, and the saving in expense of keeping in repair will pay for it in one year, besides saving all the annoyance and expense of delays. it will break rocks or iron ore to any required size, and can be so adjusted as to pulverize to any required fineness. Its capacity with three inch belt is thirty tons iron ore in ten hours. Larger machines in proportion. Every machine guaranteed as to efficiency, material and workmanship. We furnish of any required size—large or small. Its lightness and efficiency make it very desirable for gold and silver mining, all the parts being easily transported. We annex the testimony of a well known and thoroughly practical rolling mill manager:

OFFICE ETNA IRON AND NAIL CO., BRIDGEPORT, Ohio, July 11, 1879.

Messrs. TOTTEN & CO.—DEAR SIRS: I have been operating constantly in connection with our works for nearly six years, one of Forster's Crushers, manufactured by you, for crushing ore, used in our puddling furnaces. I have a thorough practical acquaintance with the Crusher in general use, and have no hesitation in saying that the Forster Crusher will crush ore with one-third the power of the Blake Crusher, and with one-half the expense of keeping in repair. The dies can be so adjusted as to pulverize. I take pleasure in saying, after using it six years, that it is the simplest, most economical and most efficient Crusher I ever saw.

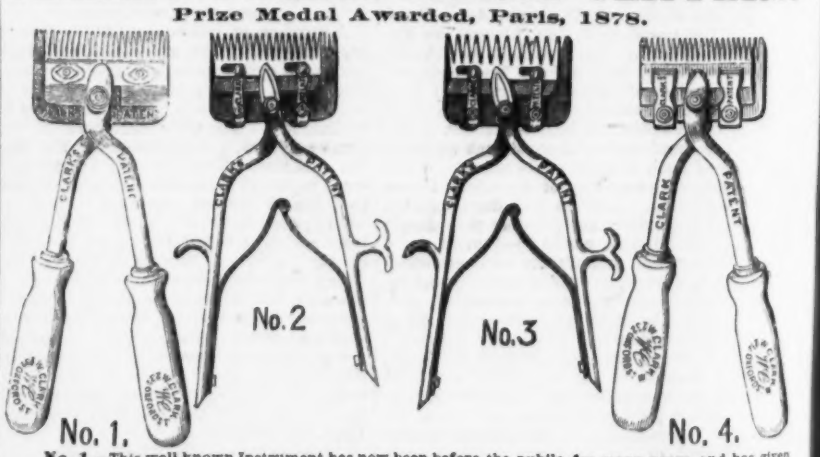
LEWIS JONES, Manager Etna Iron and Nail Co.

All communications addressed to us will receive prompt attention.

TOTTEN & CO., Rolling Mill and Heavy Machinery Founders, Pittsburgh, Pa.

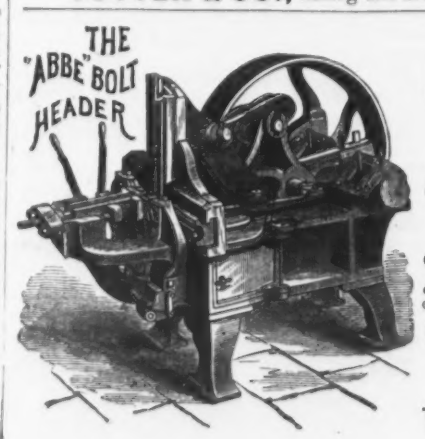
CLARK'S PATENT HORSE CLIPPERS.

Prize Medal Awarded, Paris, 1878.



No. 1.—This well-known Instrument has now been before the public for many years, and has given universal satisfaction, and is everywhere acknowledged to be by far the best, and therefore the cheapest in the market. Nos. 2 and 3 have also met with great success. **No. 2.**—ONE-HANDED CLIPPER, for heads, manes, quarters and difficult parts, leaving one hand at liberty to hold the horse, thus enabling the Clipping to be performed by one man only. **No. 3.**—Same as No. 2, but with coarser teeth, for legs and bellies, and coarse hair, which would break the finer teeth. Avoiding the necessity of getting under the animal, and the consequent liability of accident to the man and also to the machine itself. No. 2 is also used for cutting human hair. **No. 4.**—A TWO-HANDED INSTRUMENT, with the patent grasshopper springs over the plates. This improvement renders the machine simply perfect, producing a softness and ease of motion not to be surpassed, whilst by the peculiar and continuous self acting pressure of the spring the two plates are kept in cutting contact, and the machine requires no further adjustment whatever. These springs are also applied to Nos. 2 and 3. **N. B.**—No Stable should be without this set of incomparable Instruments. See that all these Machines are fully stamped in strict accordance with the above illustrations—none others being genuine. To be obtained wholesale of **Messrs. McCOY & Co., 134 Duane St., New York,** and all merchants in the United States; and retail, of all Saddlers, Ironmongers and Cutlers in the world, and of the Patentee, **W. CLARK, 232 Oxford St. London.**

THE "ABBE" PATENT Bolt Forging Machine.



Any Imaginable Shape of Head can be Produced.

All its working surfaces above the Water and Cinders.

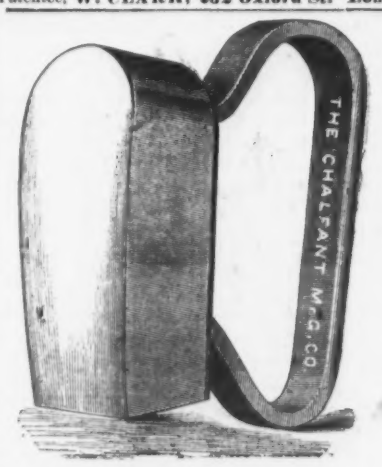
There are neither Gears, Cams nor Springs—every motion being positive. For particulars address

S. C. FORSAITH & CO.,

Manchester, N. H.

Also Manufacturers of

The "Pamer" Power Spring Hammer.



CHALFANT MFG. CO.,

Office and Warehouse,

435 Arch St., Philadelphia.

Owners and Manufacturers of the

Celebrated Patent Gas Heating Smoothing Iron.

Can be heated on any ordinary gas burner in three minutes. People who have to board cannot get along without them.

Also manufacturers of the

Improved Troy Polishing Iron

for laundry purposes. For sale by Hardware and Housefurnishing dealers.

Liberal discount to the trade.

INDUSTRIAL ITEMS.

NEW HAMPSHIRE.

The Nashua Iron and Steel Company have just received an order from the Hinkley Locomotive Works for 400 locomotive steel tires, and are running their works night and day.

CONNECTICUT.

The Eaton, Cole & Burnham Company, of Bridgeport, are about to build a large foundry. Britton & Hotchkiss have leased the unoccupied tap and dye shop, and will employ 100 men in making silverware.

Landers, Frary & Clark are building an addition to their iron foundry at New Britain, which will be completed in a few weeks.

MASSACHUSETTS.

The Bay State Iron Company, South Boston, are now working 28 puddling furnaces, the entire product of which is used in the manufacture of plate iron, for which they have orders ahead for some time. Their two plate mills are running to their full capacity and turning out over 50 tons of steel plates. They are now employing about 400 men, and contemplate starting up one or more of their additional mills soon.

J. H. Paine, having purchased the works and tools of the Chase Machine Company, now possesses increased facilities for the manufacture of vertical steam engines (a specialty being made of marine and yacht engines), in which business he has been engaged for the past four or five years.

The Knowles Steam Pump Works, at Warren, propose at once to make still another addition, 50 feet in length, to their factory.

NEW YORK.

The Davis Sewing Machine Company, of Watertown, have enlarged their already extensive works by the addition of 150 feet to their shop; and although it doubles the productive capacity of their works, they are now far behind in their orders.

The Wassaic Blast Furnace of N. Gridley & Son, Wassaic, went into blast November 28 to make a fine quality of car-wheel iron.

The Knickerbocker Scythe Works, at Ballston Spa, are now working two sets of men—day and night.

NEW JERSEY.

The Boston and South Mountain Railroad Company have purchased the Delaware Rolling Mill property at Phillipsburg, N. J., for $35,000. They will manufacture spikes, tie plates and other shapes used in the construction of the road. It is reported they will add a train roll for rolling rails.

PENNSYLVANIA.

Eight of the 13 furnaces in the vicinity of Columbia are now in blast, and another will soon blow in.

Perrottet & Hoyt, Columbia, are making new hot-oven castings for the Emma Furnace of the Logan Iron and Steel Company, at Logan, Pa. This firm has been doing a fair business this year, and orders continue to come in.

The Messrs. Weimer of Lebanon have the contract for putting stack No. 1 of the Swede Furnace, in Montgomery County, in order, and to replace stack No. 2 with a brick and iron stack, which will be much larger than the present one; also to build a new engine for stack No. 1.

The old Schall Furnace, at Norristown, is filling, and will be blown in in a few days. The prospect of this furnace resuming is making things lively in the hematite region around Norristown.

It is altogether probable that the Pennsylvania Railroad Company will erect at Altoona—operations to commence as soon as the material which has been ordered arrives—a new car wheel foundry on the vacant ground west of the present foundry, near Sixteenth street. The structure will be a temporary one, which will be used for about a year, when the expectation is to replace it with a permanent building. The new foundry will be run independent of the one now in operation, and will be supplied with cupolas and cranes with a capacity for turning out 125 wheels per day.

The repairs on the furnace and mill of the Shenango Iron Works at Newcastle are progressing as rapidly as can be expected. These works have not been running for several years, and the labor to put them in good repair is very great. No person, unless he has frequently visited these works, since the new management have commenced to put them in running order, can form any idea of what has been, or what yet remains to be done before the fires will be lighted and everything in good running order. The proprietors are having all the work done in a substantial manner, so that when once under headway frequent stoppages for repairs will not be necessary.

The Erie Car Works are running night and day.

The Marietta Furnace No. 1, at Marietta, is undergoing repairs. No. 2 is in and doing excellent work.

At the Philadelphia Exchange, on Tuesday, November 25, there was sold at auction the property of the Emaus Iron Company, in Lehigh County, consisting of a tract of land of 54 acres, together with a blast-furnace engine, casting and washer houses, offices, carpenter and blacksmith shop, and three ore leases. The property was finally disposed of to Mr. Alex. D. Campbell, attorney for the trustees, for $105,000. It is understood that the purchase was made in the interest of the trustees.

Last week a 70-ton fly-wheel in the Pennsylvania Steel Works, at Harrisburg, bursted with a loud report, hurling huge pieces of iron in all directions, one piece flying through the roof and 50 yards away, another passing through the roof, coming back into the mill, cutting off several heavy timbers and burying itself 4 feet in the ground. The engine, the slate roof and one of the mill walls were badly damaged, and Charles Powers was slightly scalded, but none of the other 400 employees were injured. The works will close until a new wheel is procured.

It is rumored that the owners of the Safe Harbor Iron Works have made a proposition to the Reading Railroad Company to extend a branch from the Quarryville road to their works, and that the proposition is being seriously considered.

Messrs. Smith & Brother, at Isabella Furnace, Reading, have sold 400 tons of pig metal that has been on their banks for several years past, and which they have been holding for better prices than they could obtain.

A. F. Wolf is running his foundry at Beaver Falls to its fullest capacity, and yet is not able to fulfill all his orders.

The Bethlehem iron mills, Bethlehem, have more orders for work now than they have had at any time during the last five or six years. They are working with a full force of men and making "overtime."

Pine Grove Furnace (Cumberland County), during the week ending November 22, made 112 tons of No 2 charcoal iron on 42 per cent. ores.

All the mills in Conshohocken are running full, double turn, with good prospects. J. Wood & Bro., are much behind their orders. They report the prospects for next year as very promising. Price there for Gray Forge Pig Iron is about $27 at furnace. The furnace men are exercised about next year's ore supply. It is very scarce.

The rolling mill at Palo Alto has begun work. It has been leased from the Philadelphia and Reading coal and iron company by Atkins Bros., and will be used by them to make puddled iron. It contains nine puddling furnaces and one heating furnace. The Port Carbon furnace, adjoining, is being put in order by the coal and iron company, and will be ready to blow in about the end of December. Both these works have been idle for five or six years.

The Musselman Furnace, Lancaster Co., will be known hereafter as the Cordorus Furnace, Messrs. Watts, Tweeds & Co., Limited, recently purchased it for $45,000. This furnace and equipments was built in 1868 by Musselman & Watts, at a cost of $130,000. The new firm blew in week before last.

The co-operative foundry, Beaver Falls, in addition to all they have manufactured this summer and fall, have sold off the immense stock they had accumulated during the dull times, and still the orders come in.

PITTSBURGH AND VICINITY.

The Juniata Bolt Works and Valley Forge, Gillespie Bros. & Co., proprietors, are very full of orders and are running overtime. The products of the works are bolts, vices, and a general line of forgings, oil well supplies, &c. The proprietors have recently added a new line of manufacture, that of sledges, Manson's hammers, railroad truck chisels and coal wedges. They employ 70 men.

The work of erecting the electric light at the steel mill of Park Bros. & Co., commenced some time ago, was completed the other day. The works are now brilliantly illuminated at night with six large lights stationed at different points throughout the building. They are run by an engine for the purpose. The immense open hearth Siemens gas furnace, which is being erected at this mill, is rapidly approaching completion.

Rumor says that the proposed new railroad from Pittsburgh to the East *via* Elizabeth and the Connellsville coke region, is a settled fact. The Pittsburgh and Lake Erie, the Lake Shore and the Michigan Southern Railroads, and Vanderbilt, who goes three-quarters of the amount needed, are all interested in the new venture.

All hopes of the rebuilding of the Brady's Bend Iron Works have died out for the present. The Chicago parties who were in correspondence with the superintendent of the ruins, have finally concluded not to take hold of them at present.

The old Pittsburgh Bolt and Iron Works, at Frankstown, on the B. & O. R. R., in the Twenty-third Ward, was started up on Wednesday last, under the title of the Elba Iron and Bolt Company, Limited, James P. Speer, manager. When the bolt company failed, the works passed into the hands of certain Pittsburgh parties, who, under the management of Harry Lynch, operated it. When shut down the second time, the First National and other banks became the purchasers of the mill property. The stock of the new company has all been paid up, and the enterprise is launched with every assurance of success. The rolling mill is now in operation, and it is expected the bolt department will be started in a little while.

The sales of pig iron at Pittsburgh during the month of November have averaged 12,000 to 15,000 tons per week.

Smith & Sons' foundry, in the Twelfth Ward, have large orders to fill. At present they are employing eight men on the new apparatus for making gas from oil.

The revival in the oil trade has given an impetus to tank building, and Riter & Conley are profiting thereby.

It requires from 25 to 26 tons of hoop iron for the hoops that are daily used at the Standard cooper shop in the Eighteenth Ward. The average weight is from 10 to 12 pounds for every barrel.

M. Neill & Bro., of the Vulcan Boiler and Tank Works, have large orders ahead. They employ about 40 men.

The Light Locomotive Works of H. K. Porter & Co., in the Seventeenth Ward, are now employing 155 men, with plenty of orders. They have about finished six light locomotives, of which one is billed for Colorado, one for Florida, one for Everett, Mich., one for Vicksburgh, one for Rodant, Ohio, and one for Laughlin & Co., at Martin's Ferry.

A Pittsburgh paper says: "The three malleable iron works here are refusing new orders, being unable to fill them." This will bear some explanation.

The Crawford Mfg. Co., Allegheny, while crowded with orders for finished goods, have been refusing orders for castings for the past seven weeks. At the beginning of the molders' strike, which has been detailed in these columns, the company notified all outside patrons of the firm to send their patterns and orders elsewhere, for by contracting for castings they would place themselves in the power of the molders.

Harbison & Walker, proprietors of the Star Fire Brick Works, have been crowded with orders for more than a year, mostly for blast-furnace lining. Their new works will be completed in January, which will give them a total capacity of 10,000,000 bricks per year. They have orders ahead for four months. The prospects for spring are better than ever before.

WEST VIRGINIA.

The Belmont Iron Works, Wheeling, employs about 600 men. They are running full and doing a good business.

The Benwood Iron Works and Blast Furnace, Wheeling, employs 500 hands. Business is good. They are running full in every department.

The La Belle Iron Works, Wheeling, employs 400 hands. Sales no better than last year, as all they manufactured were sold. Prices are much better. They are working full.

The Star Foundry, of B. Fisher, Wheeling, employs 40 hands. Business is very good.

At the Arlington Foundry, Joseph Bell & Co., Wheeling, business is double what it was last year. About 75 men are employed.

The Wheeling Hinge Factory, Wheeling, employs 133 hands. Business is 500 per cent. better than last year. They are running full.

The Whittaker Iron Works manufacture sheet iron exclusively. They employ 250 hands, and have increased their capacity one-fourth in the last year.

The Centre Foundry, Wheeling, employs 12 men. Their business is much better than last year.

The Riverside Iron Works, Wheeling, employs 800 hands, and are working to their full capacity. Business, so far as satisfactory prices are concerned, is much better than last year.

OHIO.

The Morse Bridge Works have taken the contract to move the Arms, Ward & Co. furnace, recently purchased by the Valley Iron Company, from Niles to this city. It is their intention to rush this work through in a hurry, and to that end they will employ not less than 500 men, 250 at Niles and as many more here. The furnace will be put up near the Valley mill and be run in connection with the mill.—*Youngstown Register and Tribune.*

The Struthers Furnace, at Struthers, is running full blast and turning out an average of about 60 tons per day of Bessemer iron. The furnace employs about 55 men, running double turn, and melts lake ore exclusively. Messrs. I. P. Brownlee and Edwin Powers, of Youngstown, are putting up a refining furnace in connection with the blast furnace, for the purpose of refining salamander. It is the first refining furnace put up in the Mahoning Valley, and the managers are sanguine of success.

The docket of stack No. 2 of the Cherry Valley Iron Works furnace, at Leetonia, on Saturday, the 22d ult., opened at the top of the stack for the space of 5 or 6 feet. Although no serious damage was done, the proprietors were compelled to blow the furnace out. The work of relining the broken part of the stack was commenced immediately. The furnace will probably blow in this week.

A company has been formed in Canal Dover called the Ohio Coal Mining Auger Company, for the manufacture of a patent coal-mining auger. It is said to be a practical tool, and has been thoroughly tested for several months, but as the company are not prepared to place it on the market, we are unable to give a description of it and its work. However, we are promised a comprehensive description in about 60 days.

At the Ohio Iron Company's mill, Zanesville, two new puddling furnaces were lighted up last week, making in all 22, besides one scrap furnace.

The Paulding Furnace of Graff, Bennett & Co., near Cecil, is to be started very shortly. This is a charcoal furnace, and has been idle for five or six years.

Porter Watson, a contractor of Lowellville, concluded an arrangement, Thursday last, with the Mahoning Valley Iron Co., of Youngstown, to remove the James Ward & Co. furnace to Youngstown, the work to be done within the next 30 days. The Mahoning Valley Iron Company also contracted with Mr. Watson for the foundation of a new furnace. This action will add two blast furnaces to the already large manufacturing interests of Youngstown.

Some months ago the Falcon Iron and Nail Co.'s works, at Niles, passed into the hands of a receiver on account of trouble existing between the members of the firm. The matter has been satisfactorily settled, and the works have passed into the hands of a newly organized company. The new firm consists of John Stambaugh, Henry Wick and Myron C. Wick, of Youngstown, and all the old members of the company with the exception of John Grist. A meeting of the corporation was held Wednesday and John Stambaugh elected president and Myron C. Wick secretary and treasurer. Mr. J. Key Wilson was appointed bookkeeper. Messrs. Cartwright, McCurdy & Co.'s lease does not expire until the 1st of December, when the new firm will take charge of the works, and after making a few necessary repairs and improvements will start up every department.

The Crescent Iron Co., of Pomeroy, capital $100,000, has been incorporated. It will operate the mill of the old Pomeroy Iron Co., which was sold at Sheriff's sale some months since.

George Turner & Son's fence works, Youngstown, are running full tilt, making bolts and fitting up rods for the Mahoning Iron Co.

Messrs. Brown, Bonnell & Co., Youngstown, will start up their nail factory as soon as practicable.

The Keystone Coal Co., newly organized, have established themselves near Steubenville and propose to commence operations in a short time. They have purchased nearly 1000 acres of coal land, have control of three-quarters of a mile of river front opposite Steubenville, and propose to get out 40,000 bushels a day. By locating at that point much expense of transportation will be saved, as there is always a better stage of water at Steubenville than at Pittsburgh. The Browns and Fawcetts are in this company. A Cincinnati company has also located near the Pittsburgh company.

The Thomas Iron Company's furnace, at Gore, will have to stop before a great while if it does not rain, as the cold dry spell of the present is taking the water away pretty rapidly. Two new hot-blast ovens are about being completed for this furnace, which gives her four ovens in all. She is doing well.

The new Crafts Furnace, at Gore, has been in blast about two weeks, and is doing spendidly. She will average 40 tons per day of the best of iron.

The Bessie and Baird Furnaces in the Hocking Valley are still in operation and doing well.

It is said that a new iron company has been organized in Logan lately. They propose to prepare the old Logan Charcoal Furnace and put her in blast in the spring. They commence work right away.

MINNESOTA.

The Duluth Blast Furnace has been purchased by Philadelphia and St. Paul parties, who have appointed Seymour Brownell general manager. Mr. Brownell has gone to Duluth, and will burn sufficient coal and get everything in readiness to put the furnace into blast early in the spring, or as soon as possible after the opening of navigation. It is understood that the new company bought the plant, which is said to be in good condition, having been well cared for all these years.—*Marquette (Mich.) Mining Journal.*

KENTUCKY.

The Hunnewell Furnace produces daily 18 tons of No. 1 iron. She has now in her stock house 1600 loads of charcoal, with 300 more to come in; and of iron ore she has 8000 tons on hand.

The Norton Iron Works, Ashland, is still running full time in all of its departments, except the furnace. Repairs will be made on the furnace in the course of a week or ten days. The Norton Iron Works since the rise in the river have shipped 16,600 kegs of nails to different points.

The Louisville *Courier Journal* says: Danville, having secured the machine shops of the Cincinnati Southern Railroad, is now fishing for the establishment of an extensive agricultural implement manufactory at that place.

The Mt. Savage Furnace will not finish her this year's blast before the 15th. Mr. T. B. Walker has rented this furnace for another year, and will make an 11,000 cord blast on his individual account.

WISCONSIN.

The Wisconsin Single Lever Lock Co. is a new corporation recently organized and incorporated in Racine, for the manufacture of single lever locks for wagon brakes. The company will manufacture the "Boss" single lever lock, heretofore made by S. Freeman & Son, and "Hurlbut's" single lever stock, heretofore manufactured by the Hurlbut Mfg. Co., of Racine. This will add another to the already numerous industrial establishments of Racine.

ILLINOIS.

Messrs. King & Andrews, of the Phœnix Foundry, Chicago, who commenced the present business last spring, now make window and horse weights, post mauls and elevator door weights, of which they turn out about 125 tons monthly.

LABOR AND WAGES.

Advices from Topeka, Kan., state that trouble occurred on Saturday, November 29, among a grading party on the Kansas Central Railroad. It appears that while a contractor was paying his men a large number of forged checks for time were presented to him, which he refused to pay. The mob of graders, with cocked revolvers, then took possession of the contractor's quarters and forced him to pay the checks. The citizens in the vicinity became highly incensed at the action of the rioters, organized a *posse*, arrested the ringleaders of the mob and restored order.

The Harrisburg (Pa.) Car Works have increased wages 15 to 18 cents a day, dating from November 3.

The employees at the Thomas Iron Works, at Gore, Ohio, sent a committee to Superintendent Wheeler, demanding another increase of wages of 20 per cent. The furnacemen having before them the example of the coal miners in that vicinity (the miners having struck for and succeeded in getting an outrageously large advance), thought they, too, should receive benefits in common with the miners. The firm granted an advance of about 10 per cent. on most furnace labor, making in all an advance of about 33⅓ per cent. within the space of a few months.

The price of digging coal at the Ashland Iron Company's coal mines, Kentucky, has been advanced to 70 cents per ton.

The molders at the Phillipsburg (N. J.) Stove Works have been granted another advance in wages.

The nail plate rollers of Wheeling have compromised on 55 cents per ton.

The miners at the Jefferson works, Steubenville, O., are getting 75 cents per ton. The Steubenville Coal and Mining Company advanced their men 2 cents per car.

The miners of Pomeroy, Ohio, have gone in at 2¼ cents per bushel. They had demanded 2½ cents, but rescinded their action and went to work at the old price.

Governor Bishop, of Ohio, has appointed Daniel Owens, of Trumbull county, Mine Inspector, vice Poston, resigned.

Mining at the Loyalhanna mines, Western Pa., is 35 cents per ton; at "Soxmans," near Loyalhanna, same price. The railroad mines near Pittsburgh, pay 3½ cents per bushel; Millwood pays 36 cents per ton, run of the mine.

At Conshohocken boiling is $4.90 per ton, while at Phœnixville it is $3.75 per ton. All classes of workmen about the mill of J. Wood & Bros. have, within the last two months, received two advances in wages, one of 12½ per cent. and one of 10 per cent.

A meeting of miners, representing 8000 men in the employ of Charles Parrish & Co., was held at Wilkesbarre, and the proposition of Mr. Parrish, granting an advance of 10 per cent. in wages, dating from November 1, was accepted. This is upon a basis of $3 per ton of coal at tide water. The company also agrees to pay a further advance of 10 per cent. upon any rise in the price of coal above $4. This arrangement is to be continued through the year 1880.

It is estimated that fully 5000 men are out on strike in the State of Ohio.

The Executive Committee of the First District Amalgamated Association of Iron, Steel and Tin Workers, having been asked repeatedly: Is it right to work six night turns per week? reply as follows:

It is the desire of our association to elevate and lessen the labors of our people; hence anything that will add either hours or labor to an already overworked class of people is both injurious to our association and to human nature. Five heats per turn, or five nights per week, is quite sufficient for any ordinary man, and we can say the same for all mill labor. After working five night turns the balance of the week is necessary for rest.

The law says five heats per turn on the double turn; no more than ten heats in 24 hours. More than five nights per week is especially condemned by the Executive Committee and all good men, union or otherwise.

Should there be any mills in the First District making more than five night turns per week, we ask them in God's name, in the name of the Amalgamated Association, and in the name of humanity, to cease doing so at once.

E. H. McAninch, Vice-Pres.
E. Schillo, Deputy.
S. Hackwelder, Deputy.
Thos. W. West, Deputy.

Pittsburgh, Pa., November 24, 1879.

The miners in the Mahoning Valley who have been on a strike have, it is said, resumed work at the old figures.

The miners of the Castle Shannon Coal Company asked for 3½ cents last week. They were told that the company could not take the initiative in making the raise, but that if the Birmingham Coal Company agreed to it they would not be behind.

The difficulty about iron with the helpers at the puddling furnaces at the Renwood mill, Wheeling, W. Va., was settled last week, and they have resumed work as usual.

Some weeks ago the puddlers at the Phœnix Iron Co.'s (Norristown) mill struck for an advance of wages. The company allowed the mill to stand idle, and purchased puddle iron in the market. A few days since the Norristown mill resumed again at the present rate of wages.

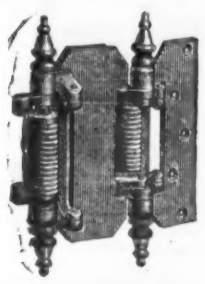
President Bishop, of the Amalgamated Association of Iron and Steel Workers, returned to Pittsburgh last week from a six weeks' tour in the eastern portion of Pennsylvania and elsewhere. He has in his travels visited a great many iron works, and reports the trade booming and wages advancing. He was at Philadelphia, Conshohocken, Norristown, Lancaster, Rohrstown, Providence, Richmond and Baltimore, organizing in that time 15 lodges for the association. He stated that, in addition to these, a number of new lodges had been organized in the western portion of Pennsylvania, as well as in several other States.

The men in the employ of the Church Hill and Kline Coal companies, at Youngstown, Ohio, to the number of about 500, quit work on the 24th inst., the company refusing to advance their wages 15 cents a on.

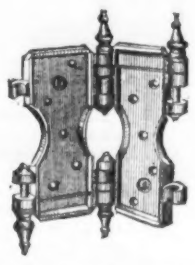
The employees of the Pennsylvania Railroad are looking for an increase of wages shortly. Since the panic set in they have been reduced 20 per cent. The first was an unconditional reduction, but the second, which took effect some months ago, was made under the promise that the 10 per cent. would be restored as soon as the receipts of the company warranted such action. A circular containing such announcement was issued at the time of reduction. Some two or three months ago the employees were talking about the increase, but the company had not begun to feel the effects of the revival in business, and so announced, but now the employees are agitating the question again. There is no probability of strike, but the men simply expect to shortly find an increase of 10 per cent. in the amount of their monthly checks. If such an advance is made, officials, as well as employees, will reap the benefit, for the last reduction reached all, from the highest to the lowest, on the pay rolls of the company.

The trouble at the Hocking Valley (Ohio) mines still continues. Owing to the scarcity of coal at Cincinnati and its high price, they were paid $1 a ton for mining. The rise in the Ohio having relieved the coal famine and reduced the price as well as the demand for Ohio coal, the operators proposed to reduce mining to 75 cents a ton. One of the operators at Nelsonville states that three-fourths of his men are anxious to resume work on a basis of 75 cents per ton. Delegates have been sent to Marsilon, their mission being to secure harmonious action among all the miners. They say they have delegates all over the State, and intend stopping all mines now running and make the strike complete by absolutely shutting off the supply of coal. Under date of November 30, the information reaches us that, contrary to general expectation, the miners in the three Hocking Valley districts have united in a demand for 80 cents for mining. It was hoped that the partial break of the Shawnee miners would induce those at Straitsville, Nelsonville, Monday Creek and elsewhere to go in at 75 cents, the same as the Shawnee men. Instead of that, the Shawnee miners have joined the others in the demand for 80 cents. The operators held a meeting and agreed to stick to their ultimatum of 75 cents a ton. The coal mine operators have nearly all agreed to put new men in the Straitsville, Shawnee, Monday Creek and Hocking Valley regions on December 1, if the miners now employed do not go to work for 75 cents a ton.

The Claim of Captain Eads Allowed.—Washington, Dec. 2.—The Cabinet session to-day was devoted almost exclusively to a further consideration of the Mississippi River jetty matter. The question at issue was whether, under the law, Mr. Eads is entitled to the full payment for the last quarter, the channel of the river during about twenty days of that time having been more or less obstructed, owing to the proper depth not being maintained. It was finally concluded, upon the recommendation of the Attorney-General, that Mr. Eads shall receive $25,000, the amount of his claim, subject to a pro rata reduction for the time during which the obstruction existed.



DOUBLE ACTING BUTT.



DOUBLE ACTING BLANK.

Exert their greatest force when door is closed.

ALSO

Bullard's Patent Carpet Stretchers,
Jewett's Patent Spring Gate Hinges,
Cast Steel Mincing Knives,
Tack Hammers and Claws,
Forged Cast Steel Screw Drivers, all varieties,
Garden and Ice Tools,
Carpenters' Awls, Cleavers, Cake Turners,
&c., &c.

☞ Send for our new catalogue and discounts.
Mention this paper.

THE COWLES HARDWARE COMPANY,

Unionville, Conn., U. S, A.,

Manufacturers of Household Hardware and Geer's Double and Single Acting Spring Butts, Reverse in Principle.

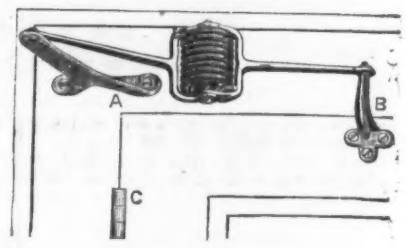
Read the following Points of Superiority:

1. They give, by ***actual test, 90 per cent. more power at closing point than at right angle,*** and the pressure is withdrawn ***50 per cent.*** in swinging the door from closing point ***14 inches,*** and grows gradually less till a point past the right angle is reached, where ***the action of the spring ceases altogether*** and the door remains at rest.
2. From this point the spring works ***equally well in either direction,*** and if the door is opened backward ***it is firmly retained against the wall.***
3. It is impossible to strain the spring, as there is not more than 40 per cent. of its elasticity used in swinging the door back to the wall; therefore it never becomes weak from constant use.
4. Between the bearing joints are placed hardened steel washers, which are much superior to common cast iron or brass, both in regard to friction and durability.
5. They will not allow the door to sag.
6. No rights or lefts. Spring power adapted for either summer or winter without change. Are the only Spring Butts that will by *actual test perform the labor claimed for them.*

BLANK BUTTS.

We are pleased to offer in addition to our line a Blank Butt, designed to be used in combination with our Spring Butts on inside doors of Dwelling Houses, Hotels, Restaurants or in any position where the doors are not subject to strong currents of air. With our New Blank Butts we furnish for inside doors the most effective as well as the cheapest Spring Butt in market.

Send for descriptive circular, with price lists and TESTIMONIALS. Mention this paper.



HERCULES

Reverse Action Door Spring & Retainer.

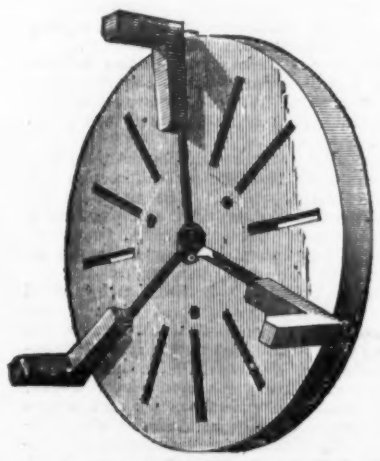
New principle, distinct from all others. Holds the door open as well as shut. Exerts its greatest force at the closing point. The best Spring in market.

THE E. HORTON & SON CO.,

MANUFACTURERS OF

THE HORTON LATHE CHUCK

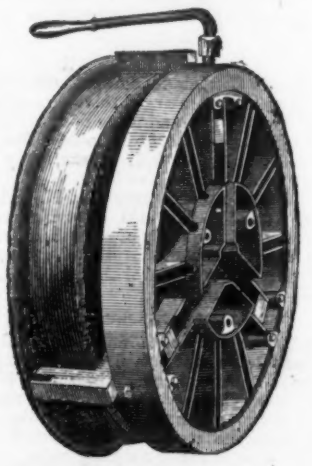
Windsor Locks, Conn., U. S. A.



Front View.

THE HORTON CAR WHEEL CHUCK.

This Chuck can be attached to a boring machine table, or lathe, and will hold a car wheel 37 inches in diameter and less. The jaws are made long to fit both tread and flange of car wheels, thus truing them both ways. For general machine work it is very useful, and will hold firmly any work that can be held in a Chuck.



Back View.

THE HORTON CAR WHEEL CHUCK.

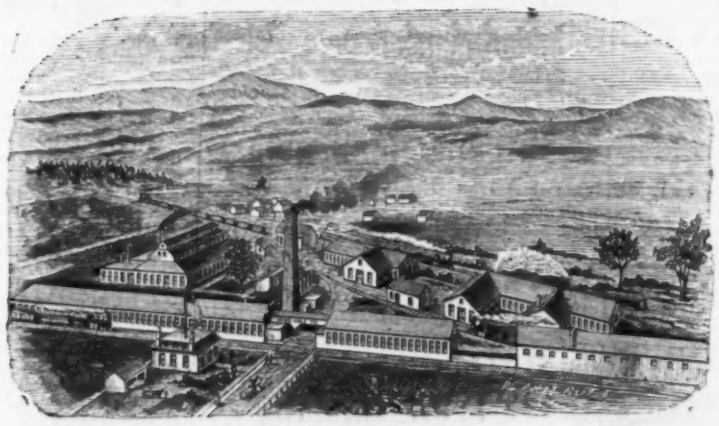
This cut represents the Horton Car Wheel Chuck holding a car wheel in proper position for boring, the flange and tread of the wheel assuming a true position on the jaws. For accuracy and ease of operation this Chuck has no equal.

THE IMPROVED HOWE SCALES.

Made in Every



Variety



Works at Rutland, Vt.

and Adapted to any



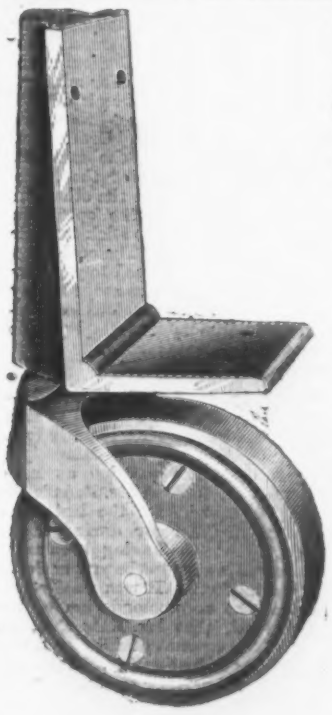
Standard.

The highest Awards have invariably been given the Improved Howe Scales wherever exhibited in competition with other makes.

OFFICES:

PRIEST, PAGE & CO., 325 Broadway, New York.
PRIEST, PAGE & CO., 145 Franklin Street, Boston.
BORDEN, SELLECK & CO., 97 Lake Street, Chicago.
J. FRED. DENNIS, 16 Holborn Viaduct, London.

WHEELS AND CASTERS A SPECIALTY.





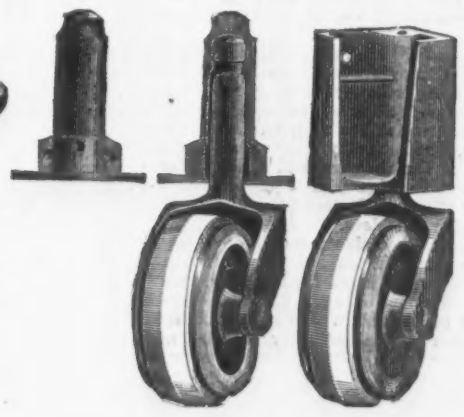
All who have used these Wheels on concrete, inlaid or wood floors say they cannot do without them. They will save double their extra expense in mills, warehouses, steamboats; in fact, almost every place where Wheels are used. My Caster Wheels are the best ever offered to the public for good furniture, as they will not mar the finest inlaid floor or soil the most delicate carpet ever used.

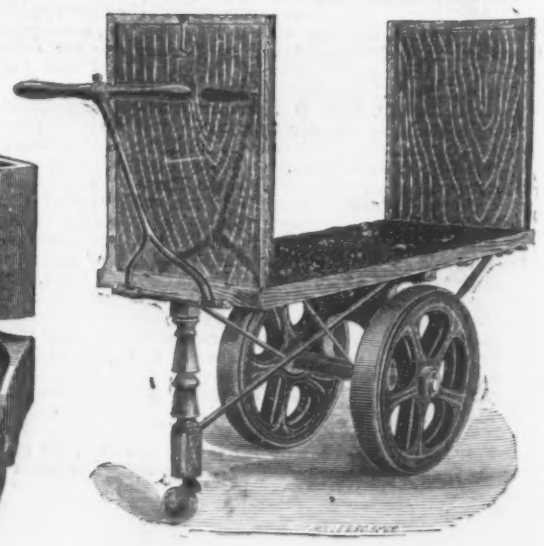
Send for catalogue and price list.

Address,

G. P. CLARK, Windsor Locks, Conn.







COLEMAN EAGLE BOLT WORKS

ESTABLISHED 1845.

WELSH & LEA.

NORWAY IRON CARRIAGE & TIRE BOLTS,

AXLE CLIPS, &c.

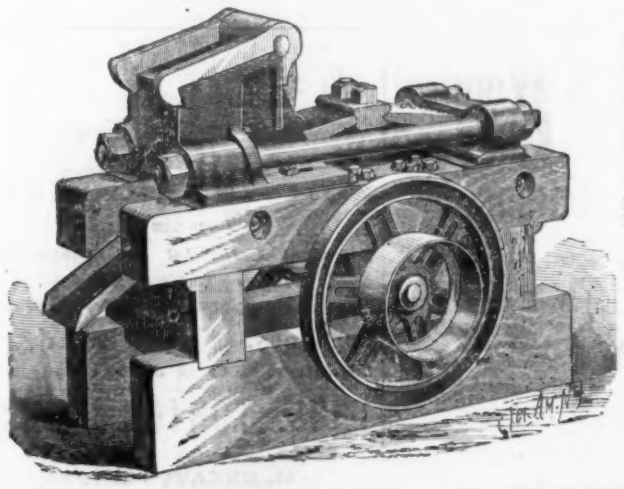
Highest and only Awards and Medals, Philadelphia, 1876, and Paris, 1878.

WORKS, Columbia Avenue, Hancock and Mascher Streets.

OFFICE, 145 Columbia Avenue (late 2030 Arch St.)

PHILADELPHIA, U.S.A.

Important to Railway Companies, Cities and Mine Owners.



BLAKE'S

CHALLENGE ROCK BREAKER

OR

Sectional Cushioned Crusher,

Patented Nov. 18, 1879.

Will be found the most economical and reliable crusher ever offered to the public for crushing

RAILWAY BALLAST, ROAD METAL, STONE FOR CONCRETE, QUARTZ, FLINT, EMERY, CORUNDUM, FELDSPAR, BARYTA, MANGANESE, PLASTER, SOAPSTONE, &c., &c.

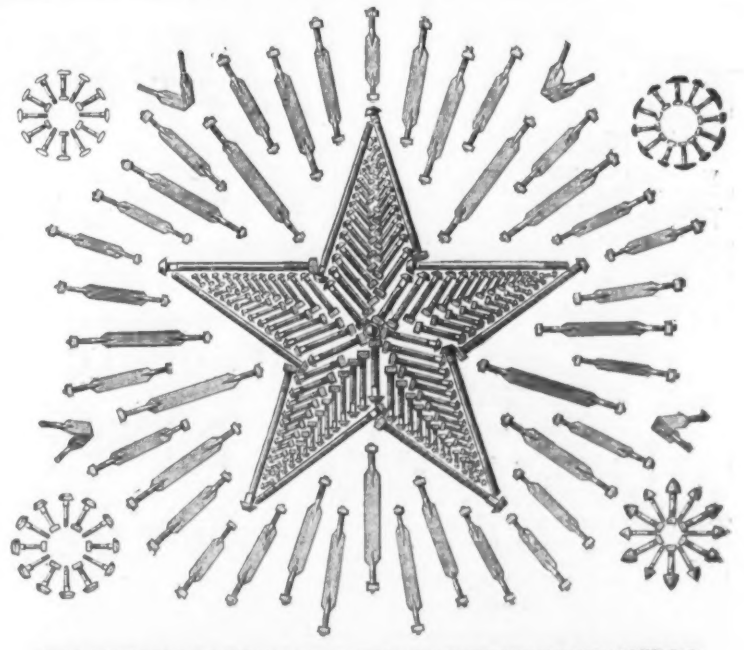
This machine dispenses with cast iron frame and pitman of our old forms. All strains are on wrought iron or steel.

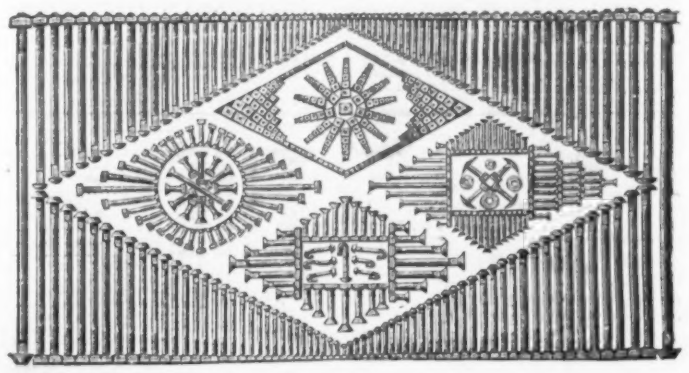
Over 50 Medals, including Paris Gold and Silver Medals.

ADDRESS

BLAKE CRUSHER CO., Sole Makers,

New Haven, Conn.





[] Norway and Charcoal Iron Carriage Bolts, Tire and Fancy Head Bolts, "Star" Axle Clips. Quality guaranteed. Finish unexcelled.

TOWNSEND, WILSON & HUBBARD.

2301 Cherry Street, Philadelphia, Pa.

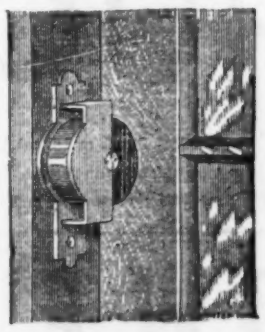
PATENT

ANTI-WINDOW

RATTLER,

FOR

Dwellings, Cars, Steamboats, &c.



The Anti-Window Rattler supplies a long needed want; it is so simple in construction that it can be used on any window, and so complete that it will prevent the slightest shaking, no matter how great the jar or how old the sash. As shown in cut, it consists of a rubber wheel in a nickel-plated or brass frame; is ornamental as well as useful, and does not interfere with raising or lowering the sash.

HEATON & DENCKLA, General Agents, 507 Commerce St., Philadelphia.

GRAHAM & HAINES, Agents, 113 Chambers St., New York.

OTIS D. DANA, Agent, 26 to 32 Pearl St., Boston, Mass.

PETER GERLACH & CO.,

MANUFACTURERS OF

Superior Cast Steel Saws

OF ALL DESCRIPTIONS.

Ice Tools, Butchers' Meat Rockers and the Standard Steel Flue Scrapers.

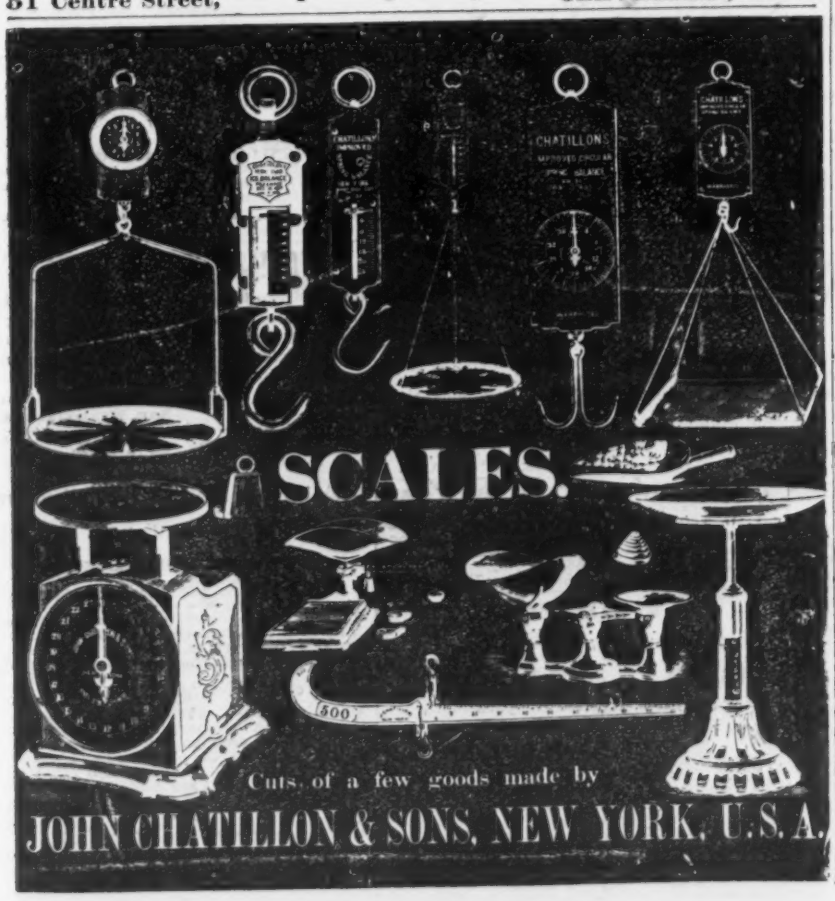
ALSO, MANUFACTURERS OF

STRAIGHT AND BILGING CYLINDER STAVE SAWING MACHINERY,

For all kinds of

Pail, Tub, Keg, Half Barrel, Barrel, Shook and Pipe Staves.

51 Centre Street, - - - CLEVELAND, OHIO.



WESTON DYNAMO-ELECTRIC MACHINE

NICKEL.

The rapid increase in the use of Nickel-Plating owing to the introduction of the Weston Machine and the very low price of nickel material, enables us to give greatly reduced estimates for complete outfits.

We are furnishing outfits specially adapted for Stove Work, giving a pure white deposit on plain or mat surfaces.

Outfits complete, with Dynamo-Electric Machine Tanks, Anodes, Solution, &c., &c., $250.

We beg to refer to the following Stove Manufacturers among 500 other houses using the Weston Machine: Richardson & Boynton, S. S. Jewett & Co., Fuller, Warren & Co., Perry & Co., Detroit Stove Works, Michigan Stove Co., Co-operative Stove Co., E. & C. Gurney, Hamilton & Toronto, and many others.

INFRINGEMENTS.

We call attention to infringements of the Weston Machine, in which Automatic Switches are used to prevent change of current. The Weston Co. are owners by grant or purchase of all forms of Automatic Switches for Plating Machines. The adoption of these machines will certainly lead to great loss to parties purchasing or using them.

CONDIT, HANSON & VAN WINKLE,
Sole Agents *NEWARK, N.J. U.S.A.*

ENGLISH AGENCY: 18 Caroline Street, Birmingham.

St. Louis Malleable Iron Company,

2116 MARKET STREET,

ST. LOUIS, MO.

HENRY M. FILLEY, President. JOHN D. FILLEY, Secretary.

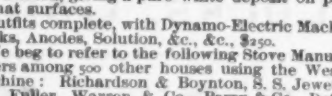
MANUFACTURERS OF

Malleable and Gray Iron Castings,

GENERAL HARDWARE, &c.

ALWAYS ASK FOR

ESTERBROOK'S



Steel Pens.

THE MOST POPULAR PENS IN USE.

For Sale by all Stationers.

ESTERBROOK STEEL PEN CO.,

Works, Camden, N. J. New York.

R. COOK & SONS,

Manufacturers of

Carriage & Wagon AXLES,

WINSTED, CONN.

ESTABLISHED 1839.

AXLES

All kinds Wagon & Carriage Axles

Manufactured by the

LAMBERTVILLE IRON WORKS,

LAMBERTVILLE, N. J. Send for prices.

PATENT SCREW WINDOW BALANCE

FOR MEDIUM AND LIGHT WINDOWS.

A Mechanical Substitute for Sash Weights.



Retains sashes at any point of opening, with large power in reserve, controlled by "Adjusting Screw." The fibered roller has unlimited durability. The patent "Clamp" prevents sagging. Cannot get out of order. THEY ARE TO WINDOWS WHAT DOOR KNOBS ARE TO DOORS, AND USERS SAY, A NECESSITY and

"SURE OF GENERAL USE."

They are as readily applied as the common sash pulley, and have the merit of doing their work—rendering the use of boxed frames, cords, pulleys and the perplexing task of hanging sash with weights unnecessary.

There is no cutting of, or attachment to, the sash; they work upon the edges of the sash only, and are not handled in working the sash.

THE SASHES ARE BOTH LOCKED AND UNLOCKED BY A MEETING RAIL LOCK, as with weight, at one operation.

RETAIL PRICES.

12 to 18 lb. sashes, 4 balances.....$1.00 per window.
12 lb. sashes and under, 2 balances .50 "

COMPARATIVE COST WITH WEIGHTS COMPLETE.

18 lb. sashes hung with weights..$2 50 per window.
18 lb. " with 4 balances applied..... 1.25 "
Balances, saving.....$1.25 "

Sold in sets of 1 and ½ gross packages. Sample sets, 4 balances, sent upon application for $1.00, postage free. Have been in use over one year, giving full satisfaction.

LIBERAL DISCOUNT TO THE TRADE.

Prompt attention is given communications and orders addressed to

As Applied.

ROBERT B. HUGUNIN,

Manufacturer of Screw Balances,

Wethersfield, Conn.



Full Size Screw Window Balance.

INFRINGEMENTS.—*To whom it may concern:*—As the inventor, patentee and solely authorized maker of the above goods under the mentioned U. S. Patents covering the combined inventions constituting the Screw Window Balance, and all other similar goods using these combined improvements being infringements of the said combined inventions, patented as before stated, all dealers, users, makers and handlers of such, are hereby notified that they will be held accountable, under the U. S. laws protecting inventions, for damages. Very respectfully, ROBERT B. HUGUNIN.

WETHERSFIELD, CONN., April 3c, 1879.

ESTABLISHED 1836.

SHELTON & CO.,

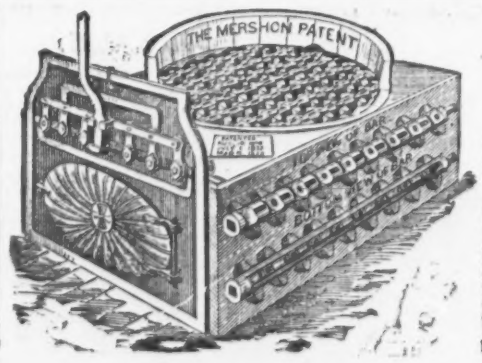
Manufacturers of every variety of



Carriage, Tire, Machine, Plow, Stove and Spring Bolts, Coach and Bed Screws, &c.

BIRMINGHAM, CONN.

Coulter, Flagler & Co., Agents, 87 Chambers Street, New York.



The "Mershon" Patent Shaking Grate and Bar for Steam, Cast and Wrought-Iron Heaters, Steam Boilers, &c.

This is the most complete, easiest working, and the most successful grate and bar ever invented. The attention of manufacturers of boilers and heaters is especially called to it. It has the largest air surface of any grate manufactured, and will generate more heat and steam with the same amount of coal than any other grates. Several sizes supplied, ranging from 18 inches to 30 inches diameter fires. Send for descriptive circular. For license to foundries and others to manufacture address **Pennsylvania Heating and Ventilating Works,** N. W. Cor. Twelfth and Filbert streets, Philadelphia, Pa.

Special Notices.

FOR SALE,

To Close Partnership.

We will sell the following property at private sale to close the partnership of D. Hillman & Sons:

THE TENNESSEE ROLLING MILL,

situated on Cumberland River, Lyon County, Kentucky, ten miles from Paducah and Elizabethtown Railroad.

This mill consists of the following machinery:

2 Plate Mill, 96x96; 2 High Rolls, driven by 60x30 engine; 1 Steam Hammer—Condee's—5 ton and 4 foot stroke
2 Plate and Sheet Mill, 76x22.
1 16-in. Bar Mill, train complete.
1 9-in. Bar and Rod Mill; 1 8-in. Bar and Hoop Mill.
9 Puddling Furnaces; 13 Knobbling Fires.
35 Boilers, 12 engines, large and small; Muck Train, Barden Squeezer, &c.
2 Run-out Fire, 7 Heating Furnaces, 2 Annealing Furnaces.
7 Pair Shears, 1 Steam Saw, 1 Testing Machine, Railroad Tracks and Scales, full sets of all Tools needed, Store House, Office, Warehouse and many workmen Houses, with 6500 acres land.

The TRIGG FURNACE,

In Trigg County, Kentucky.

A first class Furnace, new, built in 1872. Charcoal furnace—48 feet high, 12 foot bosh; 60 pipe; Davis Hot Blast; Four Boilers; Horizontal Engine, 6-foot stroke, 20 in. diameter; 3 Blowing Cylinders, 6 feet by 36 inches diam. Furnace arranged for Hot or Cold Blast. Pig has great reputation. With 5500 acres of land.

TERMS OF SALE.—1-4 cash. Balance on 1, 2 and 3 years. Lien retained to secure purchase money.

This property is reached by Paducah & Elizabethtown R. R., Eddyville, Ky., Station, or *via* Cumberland River. Correspondence solicited. Parties will be shown the property at any time.

Furnace or Mill, either, will be sold separately, if desired.

The Boiler Plate and other Irons made at these works have a national reputation, being known as "Tennessee Iron." Address

D. HILLMAN & SONS,

Tennessee Rolling Works,
Lyon Co., Kentucky.

For Sale,

THE ROUGH AND READY HOT BLAST CHARCOAL FURNACE

situated in one of the healthiest regions of Tennessee, with all its modern improvements, including a 30 horse-power engine, and two 40 feet boilers. The furnace is in close proximity to inexhaustible supplies of rich brown hematite ore and limestone, and the rail and river shipping facilities are excellent. Iron can be manufactured for not exceeding $18.00 per ton, and put into market within 24 hours. Furnace can be put into blast without much expense for repairs. Included in the property are 9000 acres of fine timber land, (including 1500 acres which are improved and under cultivation) a Saw and Grist mill with a 12 horse-power engine flue boiler, Carpenter and Blacksmith shops, Stables and Cribs, Coal, Engine, Cinder, Casting, Tool, Store and Ware, and about 60 Dwelling Houses. It is the wish of the undersigned to sell only the whole of this property, which can be bought on reasonable and liberal terms. For further particulars

Address

D. THEOBALD, Youngstown, Ohio.
A. GUCKENHEIMER & BRO.
93 First Avenue, Pittsburg, Pa.

PRIVATE SALE

OF A VALUABLE

Rolling Mill Property.

The undersigned offer at private sale that certain property known as the "Codorus Steel Works," formerly the property of the York County Iron Company, situated on the Northern Central Railway and the Frederick Division of the Pennsylvania Railroad, at York, Pa. The tract contains about seven acres of ground, with a stream of water passing the same, and on which is erected a frame iron roof Rolling Mill Building, about 160 x 200 feet.

The Machinery consists in part of the following, to wit:

1 Steam Engine, 15 H. P., with two pairs of Shears.
1 Steam Engine, about 40 H. P., with two Blowing Cylinders.
1 Steam Engine, about 150 H. P., with Duplicate Cylinder.
11 Puddling and Heating Furnaces.
16 Boilers. Steam Hammer.
1 Train Rolls for Merchant Iron.
1 Train Muck Rolls.
1 Train Round Iron. Several Trains for T-Rails.
1 Crusher, Punch, Saws, Tools, &c.

The above property will be sold at a bargain. For further information apply to the

FARMERS' FIRE INSURANCE CO.,

York, Pennsylvania.

Bolt and Nut Tools

AT PUBLIC SALE.

Will be sold at Public Sale on WEDNESDAY, the 17th day of December next, at the Bolt and Nut Works formerly owned by M. B. Stotsenburg & Co., Wilmington, Del., a large lot of Tools, such as Punching Machines, Bolt Cutters, Lathes, Drills, Planing and Shaping Machines, and all kinds of Tools commonly used in such business.

Sale to commence at 1 o'clock P. M., when conditions will be made known by GEORGE S. CAPELLE or ALLEN GAWTHROP, Committee, Wilmington, Del. Please send for Catalogue,

---

Wanted Immediately.

Pair 16 inch or 18 inch by 3 feet or 3½ feet connected Link Motion Engines.

State price and all particulars.

Address. C. W. BROWER,
Tremont Iron Works,
Tremont, Schuylkill Co., Pa.

For Sale or Lease.

FOUNDRY,

NEW YORK CITY.

The plot of ground measures 275 ft. frontage by 200 feet deep. It has a splendid Foundry, 60x165 feet, with cupolas, cranes, &c. If leased, additional buildings to any extent will be erected to accommodate any kind of manufacturing business.

Apply to WM. J. FRYER, Jr.,
Ætna Iron Works, 104 Goerck Street.

WANTED.

Rolling Mill in good location, with capacity of 12 to 15 tons per day for small bar iron.

Address, stating terms and full particulars of mill, and of labor and raw material,

A. B. C.,
Office of *The Iron Age*, 83 Reade Street, N. Y.

WANTED.—An experienced traveling Hardware Salesman will be open for an engagement on the first of January. Address A. K.
Office of *The Iron Age*, 83 Reade St., New York.

FOR SALE OR TO LEASE.—Factory property at Elizabethport, N. J., comprising casting, annealing, tumbling and finishing shops; also engine and boiler and tools to make saddlery hardware or other malleable iron goods.
P. BALEN, 84 Broad St., New York.

Special Notices.

FOR SALE OR LEASE.

The Extensive Engineering Establishment known as

THE SOUTHWARK FOUNDRY,

PHILADELPHIA.

This property occupies the entire square bounded by Washington avenue, Federal street, Fourth and Fifth streets, and covers about 3½ acres. A track runs entirely through the works, connecting with railway system of the country, by which raw material can be supplied to the various departments, and finished machinery loaded on cars by means of a power crane lifting thirty tons. The improvements are:

Pattern Shop, nearly fire-proof, two stories.	204X40
In the lower story of which are five pattern storage rooms, entirely fire-proof, each...	24X40
Foundry	253X106
Brass Foundry	56X24
Brass Pattern Shop, two stories	45X64
Erecting Shop	168X64
The Erecting Shop has an Intermediate Gallery Floor at one end	27X64
do. do. at other end	32X64
Office, with fire-proof vault, two stories	24X42X70
Machine Shop, three stories	55X164
Smith Shop, one story	152X40
Boiler Shop, one story	104X74X185
With Intermediate Gallery Floors at each end for sheet iron work	35X99
Boiler House, with bins for coal and storage of wrought and cast turnings	28X32

Platform Scales, between office and machine shop, and between machine and boiler shops.

Track Scale, between boiler and pattern shops, capable of weighing a loaded car.

The second story of the office is one room for the drawing department, connecting with the Superintendent's office, and will accommodate twelve to fifteen draughtsmen.

All of the above are brick; the office, boiler shop and pattern shop fronts on Washington avenue being of pressed brick and harmonious in design.

The shops are supplied with all the tools requisite to carry on a business amounting to over a million dollars per annum, and to employ advantageously from 700 to 800 men.

Machinery all driven by power, as follows: Boiler located in boiler house, about the center of the property; pattern shop has Daniel's planer and a line of lathes driven by a horizontal engine. Foundry has extensive core-ovens, overhead railway crane, driven by its own engine and boiler; one steam crane, one power crane, driven by pur-mill engine; a pair of vertical blowing engines, hydraulic lift for coal and iron; two large cupolas, and all requisite fixtures. Brass foundry has four pot furnaces and a small cupola. Erecting shop has in it two large planing machines, one of them a pit machine, which takes a piece of work 8 feet wide, 20 feet long and 20 feet high, and in which the tool travels. The other is a heavy table planer 12x9x20 feet, in which the work travels. Two power cranes, lifting 20 tons each, command the floor, and a power crane commands the track, for loading heavy work, and a large lathe, 7 feet swing and 25 feet bed, all driven by an oscillating engine. In the machine shop, all the tools are of improved construction, driven by two lines of shafting on each floor, all operated by a large horizontal engine, driving them through belts, in such a manner as will allow each line to be thrown out without interfering with the others.

The lower floor is commanded by cranes through its whole length. A hoist communicates with the second floor, on which are small lathes and planers, and the third, on which are storage rooms. The boiler shop is fitted with power rolls, power riveter with hoist, to take a cylinder boiler 50 feet long. Punch and shears with carriage on track, set so that the plates can be drilled and sheared without readjustment.

On adjoining lot is a stable 18x64, which will be sold with the property.

For further particulars, price, terms, &c., address

MERRICK & SONS,

230 South Third St.,

PHILADELPHIA.

Good Business Opportunity.

A half interest in a retail and jobbing Hardware Business in one of the best and liveliest cities in the most promising State in the West can be had by the right party. Capital required $10,000 to $15,000. Stock on hand all new and staple goods, bought for cash before the advance. Want to increase the jobbing business, as the prospects and present trade are good.

Address, PARTNER,
Office of *The Iron Age*, 83 Reade St., New York.

FOR SALE.

Car-wheel Borer, Bement.
20 in. x 20 ft. Sellers Lathe.
36 in. x 12½ ft. Sellers Planer.
Crank Planer, two Fox Lathes,
Three Milling Machines, Screw Cutters,
Rock Drill, Mine Hoist,
2 to 200 horse-power engines and boilers.

A. G. BROOKS & WINEBRENER,
261 N. Third street, Philadelphia.

Bissell & Welles,

Wholesale Hardware Auctioneers,

83 Chambers and 65 Reade Sts., N. Y.

Sales held weekly for the trade. Consignments solicited. We refer to the leading Manufacturers and Importers.

WE QUOTE FOR

STEEL OR IRON RAILS, STEEL TIRES,

Axles, Forgings, Bars, Plates, Angles, Sheets and Billets of any temper or for any purpose. Also, Steel Nail Sheets, Wire Rods, Springs, and all kinds of Steel goods. Also, Spiegeleisen, Ferro-manganese and Silicious Pig Iron, f. o. b. any British port, or c. f. i. any United States port. Thirty years' experience in the Steel Trade.

NIXON BROTHERS,

Newcastle-on-Tyne, **ENGLAND.**

FOR SALE.

Boiler 150-horse-power, engine 200-horse-power, and other smaller sizes. Machinery for rolling steel tires complete, Machinery for making ice with the greatest economy. All sizes built at short notice. Boilers built to order warranted the most economical.

Apply or address

LESLIE, Manufacturer,
Railroad Avenue, Jersey City.

SITUATION WANTED.—A mechanical engineer of 20 years' experience on car locomotive and railroad work, including engines, boilers, tools and general machine work, wants a situation as superintendent or manager of a manufacturing company. Is a draughtsman, and familiar with designing, estimating, contracting, organization of and working men in the construction of machinery, building of railroads, shops, &c. Address,

PRACTICAL.
Office of *The Iron Age*, 83 Reade Street, N. Y.

Special Notices.

Foundry and Machine Works For Sale,

TO CLOSE COPARTNERSHIP.

Located in Columbia, Lancaster County, Pa., on a Main Street.

Ground 220 ft. front, 198 ft. deep. Machine Shop, 60x40, with Pattern Shop in second story; Smith Shop, 34x28, with Boiler House adjoining; Foundry, 75x53, with 2 cranes and 3-pot Brass Furnaces. All brick buildings with slate roofs, and rebuilt 1872. Also, frame Pattern Warehouse, slate roof. Patterns, Tools and Fixtures for Blast Furnace, Rolling Mill and general heavy work. Works are near several railroad depots, with siding alongside, and are doing a good business. Will sell out entire works, or sell ground and buildings with the steam power for other purposes.

PERROTTET & HOYT, Proprietors.

Spike Maker Wanted.

Apply to or address,

Daniel W. Richards & Co.,

88 to 96 Mangin St., New York.

WANTED.

To purchase a half interest in some well established and paying Hardware and Housefurnishing business in some growing town west of Chicago, and with an elderly gentleman preferred. Or will accept a good situation as receiving, shipping or to take charge of an order department in a wholesale house. Have had several years' experience, and can furnish A1 references.

Please address, HARDWARE,
Care Letter Carrier No. 26, Buffalo, N. Y.

ANTHRACITE BLAST FURNACE

For Sale or Lease.

Situate on the Susquehanna & Schuylkill R. R., near Pine Grove, Schuylkill Co. Capacity, 120 tons per week. With 140 acres of good Land, 20 Houses, Barns, Stables, &c. A branch of the Swatara Creek runs close to the Furnace. 29 miles from Cornwall Ore Bank, 18 miles from limestone, and 10 from coal. THOMAS COOCH.

POTTSVILLE, PA., October 9, 1879.

A New Ax Factory For Sale at Half Cost.

Built with all modern improvements and at panic prices in 1876. Building, machinery and engine all complete, in first class order, ready to start; capacity about 150 doz. axes or tools per day. Both steam and water communication with coal mines, New York and the West. Coal landed in bins from canal without cartage. Location in great iron manufacturing center. Address A. M. HANNON, Cohoes, N. Y.
Or J. H. PARSONS,
Provident Life Insurance Co.,
Western Union Building, New York.

MACHINERY,

NEW OR SECOND HAND,

ALL KINDS SPECIAL MACHINERY TO ORDER.

Designs Furnished.

RICHARDS & DOLE, *Springfield, Mass.*

Will J. K. & Son, who wrote us about shafting, send us their P. O. address.

FOR SALE.

The entire **Canadian** right of Kenyon's **Adjustable Chain Pump Bucket, a superior and substantial** article. Can be accurately adjusted to fit the tube, and enlarged to take up the wear, so that the pumps can be kept in good working order. United States County and State rights for sale. Address,

THOMAS KENYON, Patentee,
Box 103, Hamilton, Ohio, U. S. A.

FOR SALE OR RENT.

The Rolling Mill Property at Topeka, Kansas, known as the Topeka Rolling Mill, for rerolling old rails. Capacity about fifty tons per day. Machinery of most approved kind and in good order, having been run but about six months. Parties desiring to lease or buy the property can do either on favorable terms. For particulars address,

T. B. SWEET,
Topeka, Kansas, or
ROYAL M. BASSETT,
Birmingham, Conn.

FOR SALE.

A 1000 Pound Steam Hammer.

ALSO

A BOILER PLATE SHEAR.

Both Tools by Ferris & Miles, of Philadelphia. Neither one has ever been in use.

Address,

THE JOHN A. ROEBLING'S SONS CO.,
Trenton, N. J.

Wanted.

A responsible firm to manufacture a first-class patent spike, well indorsed and with orders ahead. Good terms will be made.

Address, SPIKE,
Office of *The Iron Age*, 83 Reade st., New York.

FOR SALE.

Stock and fixtures of a

Wholesale and Retail Hardware Store,

doing a good business and in excellent location.

Address, HARDWARE,
Office of *The Iron Age*, 220 S. 4th st., Philadelphia.

Wanted.

A good Superintendent for Rolling Mill for making bar iron. Must be capable of giving figures on costs, &c. Address, stating experience, references, salary expected, &c.

X. Y. Z.,
Office of *The Iron Age*, 83 Reade St., New York.

Jute Machinery for Sale,

Consisting of 4 break cards, 4 finish cards, 1 Robing frame, 6 spinning frames, 9 looms, drawing frames, cap winder, calender, &c. Harris-Corliss engine, 12x36, shafting, belting, Harrison boiler, &c., all in perfect order. With a daily capacity of 3000 yards. Bagging from butts or tow. For particulars inquire of

H. L. FEARING & CO.,
Nov. 20, 1879. 91 Commercial st., Boston.

Blast Furnace.

A party having an established iron business in New York, and first-class business connections, with sufficient capital to guarantee and make some advances when necessary, would like to sell the product of two or more furnaces making either foundry or mill iron.

Address

P. O. BOX 1388, New York.

SCRAP IRON and Old Rails supplied for cash, in quantities and of qualities to suit the American markets, by A. NORRINGTON & CO., 34 Great St. Helens, London, England. First-class references given.

Special Notices.

Second-Hand & New Tools

FOR SALE.

December List.

The Tools in the following list are all of Wood, Lighte & Co.'s make, have been used, but are all in good order and will be sold very low:

Five Engine Lathes, 15 in. swing 6 ft. bed.
Five Engine Lathes, 20 in. swing 7½ ft. bed.
Five Engine Lathes, 20 in. swing, 8 ft. bed.
One Engine Lathe, 24 in. swing 12 ft. bed.
Two Upright Drills, 27 in. swing, not geared.
One Upright Drill, 22 in. swing, not geared.
One Planer, 37 in. x 37 in. x 10 ft.
One Planer, 72 in. x 66 in. x 24 ft.
One Shaping Machine, 12 in. stroke.
Four Bolt Cutters, various sizes.
One Horizontal Boring Lathe.

The following are all new tools to be sold very low, and are all Wood, Lighte & Co.'s make:

One Shaping Machine, 14 in. stroke.
Seven No. 2 Bolt Cutters.
One No. 1 Bolt Cutter, with centers
Five No. 2 Bolt Cutters, with center.

Also the following miscellaneous Tools:

One 15-horse-power Upright Engine, boiler and all connections, made by the N. Y. Safety Steam Power Co.—as good as new.
One Portable Engine, 6 in. cylinder.
One "Pond" Index Milling Machine.
Two Chase Patent Pipe Cutting Machines.
Two Engine Lathes, 13 in. swing, 6 ft. bed. Two Engine Lathes, 22 in. swing, 8 ft. bed. One Engine Lathe, 15 in. swing, 6 ft. bed. Three Engine Lathes, 20 in. swing, 8 ft. bed. Six Turning Lathes, 14 in. swing, 4½ ft. bed. Three 4-spindle Drills. One Gear Cutter. One new "Hardaway" Bolt Heading Machine, to head up to ⅞ in. bolts. One new "Hardaway" Bolt Heading Machine to head up to 1¼ in. bolts. A lot of Saw Tables and Wood Working Machinery.

Please specify which of the above tools you want and we will forward all particulars.

A Woodruff & Beach Beam Engine,

Low pressure, 42-inch cylinder, 84 inch stroke, with fly-wheel pulley 20 feet diameter, 36 inch face, and

Four Tubular Boilers,

60 inches in diameter, 20 feet long, and all connections practically as good as new.

For sale by

The Geo. Place Machinery Agency,

121 Chambers and 103 Reade St.,
NEW YORK.

For Sale.

One 18-in. Muck Train, 3-high.

One Breaking-down Train, 2-high.

One Engine, 14x30.

One " 9x32.

One Rail Punch and Straightener.

Two Rail Saws and connections, all in good order, having been in use only a short time. For terms &c., address,

J. M. BROWNSEN,
P. O. Box 748, Pittsburgh, Pa.

Blast Furnace Manager Wanted.

An able and experienced manager and bookkeeper is wanted; also a founder. Address, stating age, references, salary desired, &c., &c.,

C. S. HURD,
98 William St., New York.

Charcoal Furnace Wanted To Lease.

One well located and able to make cold blast car-wheel iron of best quality. State size, age, facilities, cost of repairs and of making iron; terms to lease, and where iron has been used.

Address COLD BLAST,
Office of *The Iron Age*, 83 Reade St., N. Y.

WANTED—By a young man, a situation in a hardware house as traveling salesman. Is acquainted with tin plates and sheet irons, and can furnish the very best reference. Has had six years' experience in the hardware trade.

Address TRAVELER,
U. S. Hotel, Portland, Me.

ASTONISHING POWER IN PUNCHING & SHEARING PRESSES.

See our illustrated advertisement on next to last page of this paper.

PEERLESS PUNCH AND SHEAR CO.,
52 Dey Street, New York City.

TO FURNACE MEN.—FOR SALE OR LEASE.—Group of developed Magnetic Iron Mines, convenient to shipping point on Lake Ontario. Ores run about 60 per cent. metallic iron, and make tough iron or Bessemer steel. Average cost mining and freight to Cleveland about $2.50 per ton. Apply to BAWDEN & MACHAR, Kingston, Ontario.

WANTED.

In a Railway Commission House a man as salesman who has an extensive acquaintance with the merchants and consumers of iron and steel throughout the country. Also must be familiar with the different brands of iron and steel and iron trade in general.

Address, M. & CO.,
P. O. Box 754, N. Y. City.

AN EXPERIENCED HARDWARE man, fifteen years in one large house in this city. Was bookkeeper, cashier, stock buyer, salesman and one of the managers. Open for any position at a moderate and reasonable salary. First-class city references. Address,

HARDWARE, Station L, New York City.

Wanted.

A second-hand pair of

RAIL SHEARS

in good condition. Address with particulars,

B. B.,
113 Water Street, Pittsburgh, Pa.

WANTED—A connection with a commission house, iron merchants, brokers or railway supply dealers, as outside man, by a young gentleman of good address, active, energetic and successful. Would be pleased to represent an out-of-town firm in New York on commission or otherwise. Can furnish the best of references.

Address, H. B. W.,
Office of *The Iron Age*, 83 Reade st., New York.

Special Notices.

ELIZABETHPORT ROLLING MILL,

Elizabethport, N. J.,

Common and Refined

BAR IRON,

Fish Plates, Spikes, &c.

Address,

DANIEL W. RICHARDS & CO.,

Importers of and Dealers in Scrap Iron and Metals,

88 to 96 Mangin St., New York.

ENGINEERS!

The Right Men in the Right Places.

Having posted ourselves in the specialties of many well-known engineers and chemists, and having made favorable contracts with them, we are prepared to supply their services

For Designing, Constructing and Testing Machinery and Fitting up Factories.
For Hydraulic Works; for Bridge Building.
For Mining Work of all Kinds.
For Blast Furnace Building and Metallurgical Operations.
For Sanitary Engineering; for Surveys.
For Railroads.
For Reports on New Inventions for Capitalists.
For Analyses and Assays.
For Expert Testimony in Law Suits.
For Professional Advice generally.

The Best Talent at Moderate Cost.

PARK BENJAMIN'S SCIENTIFIC EXPERT OFFICE,
37 Park Row, - - NEW YORK.

JOHN R. WHITLEY & CO.,

European Representatives of First-Class American Houses,

WITH

FIRST-CLASS AGENTS

IN THE

Principal Industrial and Agricultural Cities and Centers of Europe.

TERMS ON APPLICATION.

LONDON, 7 Poultry, E. C. **PARIS,** 8 Place Vendome.

THOS. TURTON & SONS,

Successors to

WM. CREAVES & SONS,

Steel, File and Railway Spring Manufacturers,

SHEFFIELD, ENGLAND,

desire to give notice that they have removed their place of business from

102 John Street, New York,

TO

40 Kilby Street, Boston,

where their American interests will be in future under the management of

MR. ALEX. A. ARTHUR.

JOHN E. SWAN & BROTHERS,

IRON MERCHANTS,

Glasgow and Middlesbrough,

Exporters of all brands of

Scotch & English Pig Iron.

c. f. i. to America and or f. o. b. British ports.

Old Iron Rails, Puddled Bars AND MANUFACTURED IRON.

The Sherman Process Co.

9 Pemberton Square, Boston, Mass.,

Issue Licenses to use the Process for the Manufacture of Iron and Steel

In the Bessemer Converter, Crucible, Siemens-Martin, Puddling, Blast and Cupola Furnaces.

The use of this Process improves the quality of the product, saves fuel and labor, and does not require any change in furnace or manner of working

See page 17 of *The Iron Age* of Oct. 25th, 1877.

TO LARGE CONSUMERS

of fine light

Malleable and Gray Iron Castings.

We can offer special inducements in the way of very superior quality guaranteed, and at fair prices. Being ourselves large consumers and requiring the most perfect castings, other work is ensured the same attention.

MALLORY, WHEELER & CO.,
New Haven, Conn.

CALIFORNIAN AGENCY.

A San Francisco firm of File and Tool makers having an agent constantly traveling among the consumers in the State and West Coast, is desirous of representing some first-class Eastern Houses in the manufacturing hardware trade.

Address **AGENCY, 248 Beale St., San Francisco, Cal.**

FOR SALE,

Job Lots and Bankrupt Stocks Hardware.

Great bargains offered to the trade.

A. W. WHEELER,
141 Lake St., Chicago, Ill.

WANTED.—January 1st, a man acquainted with imported (particularly German) Cutlery and Hardware, as managing stock clerk. Address with reference and salary expected.

F. H.,
Office of *The Iron Age*, 83 Reade St., New York.

WANTED.—A situation as manager in a tin plate or a merchant iron works, one that understands the practical parts of both iron and steel making for boiler plates and all kinds of iron-making. Address RICHARD JONES.

Care HEZEKIAH JONES,
No. 19 Hyde Park, Vermont.

Sanderson Bros. Steel Co.

A limited number of shares for sale by

EDWARD FRITH & SON,
241 Pearl street, New York.

Trade Report.

Office of THE IRON AGE,
TUESDAY EVENING, December 3, 1879.

The past week has been one of activity and excitement in financial circles. The event of chief interest was the sale by Mr. W. H. Vanderbilt of 250,000 shares New York Central stock, of the par value of $25,000,000, to a syndicate of American and foreign bankers. The price paid was 120.

The specie importations for the week have been large, bringing the total since January 1st up to $77,184,080, of which $67,901,194 was gold. From August 1st to November 28th the importations reach $70,685,516, consisting of $68,584,455 gold and $2,101,061 silver, as follows: $34,084,190 foreign gold coin, $21,161,321 gold bullion, $13,235,730 American gold coin, $103,214 gold dust, $1,168,934 American silver coin (including trade dollars), $901,618 foreign silver coin and $30,509 silver bullion. Of the total since August 1, $41,853,033 was received from the Continent, $23,583,790 from Great Britain, and $5,243,693 from West Indies and South America.

The bond market has been strong for governments and irregular for railroad mortgages, with a general decline among the latter. We give below the closing quotations of governments.

In the stock market there has been somewhat less eagerness for speculation since the recent collapse, which ruined so many outside "lambs" and made such fat feeding for the "wolves," who were operating to break the market. During the past week prices advanced ½ @ 6 % and declined 1 @ 12 %. The principal dealings have been in Erie, Lake Shore, New Jersey Central, Wabash, D., L. & W., and Western Union. We give below the closing quotations of active shares.

The bank return shows an increase of $865,950 in surplus reserve, which now stands at $7,283,525, against $12,543,800 at this time last year, and $9,663,425 at the corresponding period in 1877. The loans show a loss this week of $2,275,500; the specie is up $2,304,000; the legal tenders are decreased $2,213,500; the deposits other than United States are down $3,101,800, and the circulation is increased $474,400.

The following is an analysis of the bank totals of this week compared with that of last week:

	Nov. 22.	Nov. 29.	Comparisons.
Loans	$276,194,400	$273,439,900	Dec. $2,754,500
Specie	50,006,700	52,310,700	Inc. 2,304,000
Legal t'nd'rs	18,985,200	16,771,700	Dec. 2,213,500
Tot. reserve.	68,991,900	69,082,400	Inc. 90,500
Deposits	250,297,300	247,195,500	Dec. 3,101,800
Reserve required	62,574,325	61,796,875	Dec. 776,450
Deficiency	6,417,575	7,283,525	Inc. 865,950
Circulation	22,550,400	23,024,800	Inc. 474,400

The foreign trade movements at the port of New York since our last issue are shown in the following tables:

IMPORTS.

For the week ended November 29:

	1877.	1878.	1879.
Dry goods	$953,320	$959,854	$1,041,861
General mdse.	4,478,738	4,788,829	4,694,893
Total for week.	$5,432,058	$5,748,683	$5,736,754
Prev. reported.	291,627,021	258,164,806	299,801,362
Since Jan. 1	$297,059,079	$263,913,489	$305,538,116

Included in the imports were items of merchandise valued as follows:

	Quantity.	Value.
Brass goods	11	$1,815
Bronzes	35	8,077
Chains and anchors	30	754
Copper		11,201
Cutlery	41	14,453
Guns	27	6,491
Hardware	25	2,192
Iron, hoop, tons	133	5,120
Iron, pig, tons	6,798	94,233
Iron sheet, tons	406	35,264
Iron ore, tons	651	1,009
Iron, other, tons	9,912	213,813
Lead, pigs	304	2,400
Lead, pkgs	14	191
Metal goods	87	8,999
Nails	169	773
Needles	7	3,593
Old metal		22,103
Platina	1	4,223
Plated ware	3	184
Percussion caps	59	5,873
Saddlery	11	2,080
Steel	8,577	49,564
Spelter	663,394	29,420
Silverware	9	911
Tin, bxs	47,980	261,602
Tin, 11,039 slabs	849,780	139,026
Wire	416	7,860
Zinc	60,500	3,097

EXPORTS, EXCLUSIVE OF SPECIE.

For week ended December 2:

	1877.	1878.	1879.
For the week	$6,869,561	$7,195,710	$6,020,509
Prev. reported	263,776,583	314,166,184	316,672,289
Since Jan. 1	$270,646,144	$321,361,894	$322,719,888

EXPORTS OF SPECIE.

For the week ended November 29:

Total for the week	$252,287
Previously reported	13,575,574
Total since Jan. 1, 1879	$13,827,861

Government bonds at the close were quoted as follows:

	Bid.	Asked.
U. S. 6's 1880 registered	101½	102
U. S. 6's 1880 coupon	104½	105
U. S. 6's 1881 registered	103¼	103½
U. S. 6's 1881 coupon	106¼	106½
U. S. 5's 1881 registered	102¼	102½
U. S. 5's 1881 coupon	102½	102¾
U. S. 4½'s 1891 registered	105½	105½
U. S. 4½'s 1891 coupon	105½	105¾
U. S. 4's 1907 registered	102¾	102¾
U. S. 4's 1907 coupon	103¼	103⅜
U. S. Currency 6's 1895	120	—
U. S. Currency 6s 1896	120½	—
U. S. Currency 6s 1897	120¾	—
U. S. Currency 6s 1898	121	—
U. S. Currency 6s 1899	121½	—

The following were the closing quotations of active shares:

	Bid.	Asked.
American District Telegraph	72	73
Atlantic and Pacific Telegraph	44½	45
Burlington and Quincy	120	121
Canada Southern	72¾	73
Caribou	4½	5
Col., Chicago and Indiana Central	19⅝	19½
Clev., Col., Cin. and Indianapolis	80	80½
Chicago, St. Paul and Minn	45	46
Chicago and Alton	98	98½
" " Pref	115	117
Chesapeake and Ohio	18	18¾
" " 1st Pref	28¾	39
" " 2d Pref	20½	23
Delaware, Lack. and Western	84½	84¾
Delaware and Hudson Canal	75¾	76
Express—Adams	104	104½
" American	57	58
" United States	47¾	48½
" Wells, Fargo & Co	104	104½
Erie	39¼	39½
" Pref	68½	69
Harlem	160	165
Hannibal and St. Joseph	32¾	32½
" " Pref	62¾	63
Homestake	40	40½
Illinois Central	98½	99½
Ind., Cincinnati and Lafayette	5½	6
Kansas and Texas	28¾	28¾
Lake Shore	104⅛	104½
Little Pittsburgh	32½	33
Louisville and Nashville	86½	87
Metropolitan Elevated	124½	125
Michigan Central	94⅛	94½
Morris and Essex	102	103
Manhattan Railway	60½	61
Nashville and Chattanooga	73½	75
New York Central	128¼	129
New York Elevated	128½	129
New Jersey Central	76¼	76½
Northwest	89½	89¾
" Pref	103¾	104
Northern Pacific	29¾	30¼
" Pref	54	54½
Ohio and Mississippi	28½	28⅝
" " Pref	57½	58¼
Pacific Mail	30¾	30½
Panama	160	170
Quicksilver	20	21
" Pref	62	64
Reading	69	69¼
Rock Island and Pacific	148	149½
St. Louis and Iron Mountain	45	46
St. Louis and San Francisco	43½	43¾
" " Pref	50	50½
" " 1st Pref	70	70½
St. Paul	71⅛	71⅜
" Pref	99	100
St. Paul and Sioux City	—	70½
Sutro Tunnel	3⅞	4
Union Pacific	85	86
Wabash and Pacific	42⅞	43
" " pref	66⅞	67
Western Union Telegraph	107	107⅛

GENERAL HARDWARE.

Business continues fairly active, and the tone of the market is strong, with an upward tendency in many lines of goods.

In foreign Hardware, business has fallen off considerably from the volume of a few weeks past, but in Cutlery and other goods suited to the requirements of the holidays, there is quite an active demand. Importers of German Hardware, pending a revised list, have advanced prices about 7½ per cent.

The demand for Nails is light, but at this season activity in this branch of trade would be unusual. Prices continue firm at $3.60 @ $3.75 for 10d. to 60d., according to quantity.

The manufacturers of Flat Head Iron Wood Screws advanced the price to discount 50 per cent. from list on the 1st inst. Flat Head Brass, Round Head Iron and Round Head Brass Wood Screws are quoted as formerly.

We have received the following notice:

Office of THE KEYSTONE SAW, TOOL, STEEL AND FILE WORKS,
PHILADELPHIA, Pa., Dec. 2, 1879.

To the Hardware Trade.—We are informed on excellent authority that some manufacturers of Wood Saws, envious of the reputation of our No. 6 Wood Saw (which, as the trade are aware, is a standard Saw bearing our name), have placed on the market an inferior Wood Saw bearing the same number, and which, being offered at a lower price than ours, is causing annoyance to our customers.

We take this method of cautioning buyers of No. 6 Wood Saws, that when they want Henry Disston & Sons' No. 6 they should satisfy themselves that this is the Saw they are purchasing.

Our No. 6 Wood Saw Blades are put up in one dozen packages, labeled No. 6. When framed, the No. 6 label is attached to each frame. HENRY DISSTON & SONS.

The Stanley Rule and Level Co. advanced the price of Boxwood Rules on the 1st instant to discount 60 and 10 per cent., and Ivory and Miscellaneous Rules to discount 50 and 10 per cent. Other Rule manufacturers have adopted similar discounts.

We have received the following circular:

RIVERTON, CONN., December 1, 1879.

GENTLEMEN: In notifying you of the necessity for another advance in the price of Rules, we think it proper to state that previous to the last advance these goods had been sold at a large loss. The recent rise in the price of Brass, and the upward tendency of labor, now justify us in making new quotations. We therefore submit the following for the ensuing season:

	Per cent.
Boxwood Rules	60
Ivory and Miscellaneous Rules	50
Combination Rules	50

Less 10 per cent. cash from all.

Respectfully yours, STEPHENS & Co.

P. & F. Corbin have changed their list price for Hatfield's Patent Hanging Sheaves to $12.75 per pair for 4-inch, and $16 per pair for 6-inch. The discount remains as before.

We have received the following circulars:

NEW BRITAIN, CONN., Nov. 26, 1879.

To Whom it May Concern.—The undersigned hereby give notice to manufacturers and to the trade that from long continued use of the terms "Kahala" and "Florentine," to designate special lines of hardware of their manufacture, they have acquired, at common law, a right to the use of such names as trade-marks, and all persons are cautioned against using the words "Kahala" or "Florentino" either on labels, circulars, descriptive catalogues or price lists to designate lines of hardware colored by any bronzing process.

RUSSELL & ERWIN MFG. Co.

WOLCOTTVILLE, CONN., Oct. 26, 1879.

To the Trade.—The court having decided that our Family Egg Beater is an infringement on the Dover Egg Beater, this is to give notice that we have stopped the manufacture and sale of our Family Beater as heretofore made.

We take pleasure in introducing our New Improved Family Beater, which the trade will find equal to the Old Family in every respect. Yours respectfully,

THE TURNER & SEYMOUR MFG. Co.
JAMES L. CARSON, Treasurer.

NEW YORK, Dec. 1st, 1879.

To the Trade.—Owing to the unprecedented demand for our Wrenches, unparalleled in the history of their manufacture, in connection with continued increased cost of production, we are instructed to advise a further advance in price of "Coe's Genuine Screw Wrenches" of either make to 55 per cent. discount from list.

"Mechanics" Wrenches made by L. Coes & Co., and similar quality made by A.G. Coes & Co., will continue to rate at 10 per cent. less than the "Genuine." The foregoing changes to take effect from this date, and are quoted subject to change without notice. All previous quotations are hereby withdrawn and annulled.

HORACE DURRIE & Co.,
Agents for L. Coes & Co.
GRAHAM & HAINES,
Agents for A. G. Coes & Co.

The Gilbert & Bennett Mfg. Co. have removed to the large building, No. 42 Cliff street, where they will carry a much larger stock than formerly. At the late exhibition of the American Institute they were awarded the "Medal of Excellence."

The Manufacturers of Tinned Iron Spoons, at a meeting held recently, adopted the following prices: Patent Threaded Basting Spoons, discount 35 per cent.; Patent Riveted Table and Tea Spoons, discount 40 per cent.; Solid Table and Tea Spoons, discount 45 per cent. An extra discount of 5 per cent. is allowed for cash.

The American Screw Co., in a circular dated 1st instant, inform the trade that they are now manufacturing, and have in stock, No. 9 Fence Wire. They have also issued the following circulars:

PROVIDENCE, R. I., December 1, 1879.

To the Hardware Trade.—We beg to advise you that we this day make a change in our prices for Stove Bolts and Sink Bolts, now quoting 40 per cent. in place of 50 per cent. discount. Withdrawing and cancelling previous quotations at variance from following, we at present quote on goods in stock:

	Dis. from list prices.
Iron Black, Iron Tinned, Block and Carriage Rivets	45
Rivets in Bulk	30
Burrs	30
Philadelphia Pattern Tire Bolts, New Philadelphia List	65
Bay State Tire Bolts, Common List	80
Flat Head Iron Machine Screws	65
Round " " "	60
Flat Head Brass " "	35
Round " " "	20
Taps for Machine Screws	45
Stove Bolts	40
Sink Bolts	40
Pointed Wires	50
Tapped Nuts	25
Hand Rail Screws	40&10
Coach Screws (by the keg 150 lbs)	55

With special additional discounts for large quantities.

Terms, cash, 30 days. Freight prepaid to New York, Boston, Philadelphia and Baltimore, and on Rivets to principal points on or east of Mississippi River. Except on Rivets, freight is not prepaid to other cities than above mentioned, but will not exceed rates from New York City. Prices not guaranteed, and orders are accepted subject to rates ruling at time of shipment.

Soliciting your orders, which shall have our best attention, we remain, yours very respectfully, AMERICAN SCREW COMPANY.

PROVIDENCE, December 1, 1879.

To the Hardware Trade: Referring to our circular of October 16th, regarding surplus stock of Rivets, Tire Bolts, Sleigh Shoe Bolts, and Coach Screws, would say that we have disposed of many sizes, but still have a considerable quantity of the original surplus stock on hand, to which we have added some Rivets of sizes and lengths not before included, and we invite your attention to the revised memorandum herewith, which we offer for sale at the same low prices, subject only to prior sale and approved credit.

Rivets, in bulk, 30 and 25 % discount, price list Oct. 16, 1879.
Tire Bolts, 70 and 25 % discount, Philadelphia list.
Sleigh Shoe Bolts, 70 and 25 % discount, price list.
Coach Screws, 60 and 25 % discount, price list Aug. 11, 1879.
Terms, cash 30 days, f. o. b. Providence.

The ⅛, ¼ and 5-16 Tire Bolts are of Philadelphia pattern, and the 3-16 and 7-32 are exact in measurement. We trust the very low prices named above, in view of the material advance of the price of iron, will induce you to purchase. In ordering, please refer to this circular. Yours Very Truly,

AMERICAN SCREW COMPANY.

Memorandum of surplus stock of Rivets, Tire Bolts, &c.

RIVETS IN BULK.

Flat Head.

Length.	Diam.	Length.	Diam.	Length.	Diam.
⅛	11-32	3¼	4	1¾	7
1¼	5-16	5	4	2	7
1¾	5-16	5½	4	2¼	7
2	5-16	11-32	5	2½	7
⅜	2	⅛	5	3½	7
½	2	⅙	5	4	7
⅝	2	¼	5	⅜	8
¾	2	⅔	5	½	8
1	2	⅞	5	⅝	8
1¼	2	1	5	¾	8
1½	2	1⅛	5	⅞	8
1¾	2	1¼	5	1	8
3½	2	1⅜	5	1⅛	8
1⅝	3	1½	5	1¼	8
1¾	3	1⅝	5	1⅜	8
2⅛	3	1¾	5	1½	8
4½	3	3	5	1⅝	8
4¾	3	7-16	6	1¾	8
5	3	⅜	6	1⅞	8
5¼	3	⅝	6	2	8
4½	3	⅞	6	3	8
5¾	3	1⅛	6	⅜	9
6	3	1⅜	6	½	9
⅛	4	1⅝	6	⅝	9
¼	4	1¾	6	¾	9
⅜	4	2	6	⅞	9
1	4	2¼	6	1	9
1¼	4	2½	6	1⅛	9
1¾	4	2¾	6	1¼	9
2	4	3	7	1½	9
2¼	4	¾	7	2½	9
		1½	7	⅜	10
		1¾	7		

Round Head.

Length.	Diam.	Length.	Diam.	Length.	Diam.
1¾	½	2	4	2	6
4	7-16	⅝	5	1¾	7
3½	0	¾	5	2¾	7
⅜	1	⅞	5	3	7
1¼	1	1½	8	1½	8
1⅛	2	2¾	5	2⅜	8
3¼	2	3¼	5	3	8
3¾	3	4	5	2	9
¼	4	1⅝	3-10	2½	9
⅞	4	17-32	6	2⅝	9
1	4	9-10	6	2¾	9
1¼	4	1¼	6	11-32	11

Oval Head.

Length.	Diam.	Length.	Diam.	Length.	Diam.
5-16	2	⅜	7	5-16	7

Cone Head.

Length.	Diam.	Length.	Diam.	Length.	Diam.
½	⅜	¼	⅜	1¼	¾
9-16	⅜	13-16	⅜	1½	⅜
11-16	⅜				

Tank, Length, —; Diam., 5d.

Bevel Head.

Length.	Diam.
7-16	6

Countersunk Head.

Length.	Diam.	Length.	Diam.	Length.	Diam.
¾	⅜	1¾	6	1 3-16	8
½ 11-32		7-16	7	1⅜	8
11-16	4	1⅜	8	¾	9
9-16	6				

Steeple Head.

Length.	Diam.	Length.	Diam.	Length.	Diam.
1¾	5	1	7	2½	7
1¼	6	1⅜	7		

Truss Hoop.

Length.	Diam.	Length.	Diam.	Length.	Diam.
1⅛	3	2	¼	2	4
2	3				

Wagon Box.

Length.	Diam.	Length.	Diam.	Length.	Diam.
3½	3	3¾	3	4	3

Flat Head Hame.

Length.	Diam.	Length.	Diam.
¾	8	⅞	8

Round Head Hame.

Length	Diam.
¾	8

Bevel Head Hame.

Length.	Diam.	Length.	Diam.
1	6	¾	8

Shovel.

Length.	Diam.	Length.	Diam.	Length.	Diam.
13-32	4	5-16	4	19-64	4
⅜	4				

Socket.

Length.	Diam.	Length.	Diam.	Length.	Diam.
13-32	4	15-32	4	9-16	4

Tire Bolts.

⅛ in.	x	1	2 in.
3-16 (10 Screw Gauge)		1¼	1½ in.
7-32		1¾	1½ 1¾ 2 2½ 2¾ 3 3¼ in.
¼		1¾	3¼ in.
5-16		1½	1¾ 2¼ in.

Sleigh Shoe Bolts—(Old Style).

Cold Pressed Nuts.

3-16 (No. 12 Screw Gauge)—1¼, 1½, 2¼, 2½ in.
¼ (No. 14 Screw Gauge)—1¼, 1½, 2½, 3½ in.
5-16 (No. 19 Screw Gauge)—2, 2¼, 2½, 2¾, 3¼ in.

Patent Gimlet Pointed Coach Screws.

6½ x ½	4 x 9-16	3½ x ¼

BRITISH IRON MARKET.

[*Special Report by Cable to The Iron Age.*]

LONDON, Wednesday, Dec. 3, 1879.

Scotch Pig.—The market is active and prices firmer. We quote:

Gartsherrie	65/6
Coltness	69/
Glengarnock	65/
Eglinton	62/

Manufactured Iron—Is steady and prices firm. Quotations for Best Staffordshire Bars are unchanged at £8.

Rails—Are in very active demand and a heavy business has been done. Prices are firmer and Welsh are now quoted £6. 10/ @ £7 10/.

IRON.

American Pig.—There has been very little movement in Pig Iron during the week, the only sales coming under our notice being in small lots. The market, however, has not depreciated in tone, and we quote it strong at the following figures: Foundry No. 1, $27; Foundry No. 2, $26; Gray Forge, $25 @ $26.

Scotch Pig.—The arrivals of foreign Iron continue heavy, about 7000 tons having reached this port during the week. Sales since our last report are trifling, and it would be difficult, in the very sensitive condition of the trade at present, to obtain first cost for the Iron should it be forced on the market for realization. The reports from Glasgow show a steadily advancing market, and the only apparent reason for the prevailing low prices here is that the business has been overdone, and more Iron is reaching this side than we have use for at present. We continue to quote: Eglinton, $24 @ $25; Coltness, $27; Glengarnock, $25; and Gartsherrie, $26.

Rails.—No new business has come to our notice during the week so far as this market is concerned, and we repeat former quotations, viz.: Steel, $63 @ 66, and Iron Rails, $50 @ 53.

Old Rails.—The demand for Old Rails continues fairly active, and between 5000 and 6000 tons are said to have changed hands during the week, on terms which have not transpired. We quote: Ts, $31, and Double Heads, $31.50 @ $32 here.

Scrap.—The stock of Scrap Iron in this market is light, and much that is afloat is sold to arrive. Prime No. 1 Wrought from yard is worth $34.50 @ $35.

METALS.

Copper.—There has been little doing since our last report, sales being confined to 300,000 pounds Lake Superior at 21¢ @ 21¼¢, which is also the nominal price of Baltimore Copper. London cables Best Selected £73, and Chili Bars, £67. 10/. They write from there under date of Nov. 15: "During the past week the market has been rather quiet, but fairly steady considering the general position of affairs. Prices have slightly turned in buyers' favor, and the prospect of dearer money alone will probably increase that tendency." The same review, in alluding to the speculation in Copper in the London market, adds: "But to proceed, what is speculation doing for the market at the present time but checking the free course of regular trade, and creating that which is insecure and censured and which must seriously endanger future business. The prices are fictitious, because they are elevated beyond their proper position, and no market is safe and sound which is unsupported by a real consumptive demand; and present orders from the Continent, India and Birmingham clearly prove the limited character of *bond fide* business. Manufactured Sheets and Tellin Metal Sheets cannot be sold in any quantity unless sellers submit to a reduction in price. Manufacturers have, perhaps, gone as far as they are able, and according to their own account, below what they ought to charge with Chili Bars quoted so high." There is nothing new from the West Coast. Manufactured Copper is steady at the combination prices. We quote: New Sheathing Copper, 28¢; Braziers, 30¢; Bolts, 30¢, and Bottoms, 33¢.

Tin.—Receipts since our last were 2000 slabs Billiton, 1600 slabs Straits and 1616 ingots Australian. Shipments from the Straits settlements to the United States were 380 tons the first half of November and 420 the remainder of the month, together 800 tons. The Banca sale came off at Amsterdam on the 27th ult., when 24,000 slabs were sold at 58.37 guilders the 50 kilos, a higher price than had been anticipated, and, under the influence of this advance, London immediately improved £4, rebounding to £96 for Straits, but soon after receded to £93. Singapore cables $28 per picul. Our market has been quiet, and closes for large lots as follows: Straits, 22¢; English Refined, 22¢; English Common, 21¢, and Banca, 24¢ @ 24½¢. "London November 15.—There have been a few large importations from Penang and Australia just lately, and this may have had the effect of damping the tone of the market; but when the recent rise is taken into account, too much stress should not be laid upon a temporary fall. In fact, when looking minutely into the actual state of the market, and seeing how firmly it has stood against the heavy quantities of both old and recent stocks which have been thrown upon it, we can only be the more deeply impressed with the opinion that the market remains in a most satisfactory condition, with a probability of still further improving." *Tin Plates.*—The market has been featureless, with a steady jobbing demand, closing quiet at the following rates for large lines of ordinary brands, per box: Charcoal Bright, $8 @ $8.25; ditto Ternes, $6.87½ @ $7; Coke Tin, $7 @ $7.25, and ditto Ternes, $6.25. The cable quotes from England: Cokes, 22/6 @ 23/. "London, Nov. 15.—There is no material change, either in the demand or quotations. Some works in Wales, which for a long time past have remained idle, are expected shortly to be restarted."

Lead.—Sales during the week foot up 2000 Common Domestic at 5½¢, now firmly held at 5⅝¢. The bulk of these purchases have been speculative, and the high price ruling is not the result of scarcity. We quote: Refined, 5⅞¢ @ 6¢. "London, Nov. 15.—This metal has slightly improved in value, and a moderate demand exists, consequently sellers are less inclined to press sales." Manufacturers have advanced their price for Bar to 7¢, but otherwise the list is unchanged. We quote: Bar, 7¢; Pipe, 7½¢; Sheet 8¢; Tin Lined Pipe, 15¢, all less 10 % to the trade. No. 1 Solder, 12¢.

Spelter and Zinc.—There has been done but a small trade during the week, at the uniform price of 6¼¢ @ 6¼¢ for Common Domestic. "London, Nov. 15.—The demand, on the whole, is limited, but consumers have been buying forward; prices are a little firmer for Silesian." We quote: Sheet Zinc, 8⅛¢ @ 8⅜¢.

Nickel.—There is a steady, moderate demand at $1.40.

Antimony.—The market has been quiet upon the basis of 20¢ for "Cookson."

COAL.

The market during the past week has had but few points of interest. The most noticeable feature has been the extreme dullness of trade. Past orders keep most people busy, but there was little or no new business. The mild weather may have had something to do with this, but it will not account for all. Some of the companies, apparently wishing to prove that times have really improved, have advanced the wages of their men slightly. This, it would seem, is a sort of burning-your-boats-behind-you arrangement. A necessary one in face of the fact that there does not appear to have been any sales at the new prices. The output of coal continues very heavy, in spite of serious complaints of the want of cars, want of water, besides many other things all tending to reduce the amount of coal coming to tide-water.

During the week there has been some talk of a general stoppage by all the companies. Yesterday it was reported that the representatives of the leading companies had agreed, and that an arrangement was already made or about to be made. Some, indeed, were certain that it was already accomplished and that a stoppage had been practically agreed upon. The facts in the case seem to be that Mr. Gowen and one or two other leading men representing the companies, had conferences with Judge Lathrop. It was understood by inference rather than by any direct statements from them, that the matter of an arrangement in regard to a stoppage was under consideration. In reply to questions yesterday afternoon, Judge Lathrop stated in substance that there was nothing as yet to communicate to the public at the present moment. In reply to a direct question, we were given to understand that up to yesterday afternoon no agreement had been reached.

Prices as quoted may be considered as nominal so long as there are no sales. Lehigh Lump is quoted at $4; Broken and Egg, $3.60; Stove, $4, and Chestnut, $3.75.

Philadelphia and Reading prices for Hard White Ash are: Broken and Egg, $3.95; Stove, $4.30; Chestnut, $4. These fancy brands run much higher, some of them being quoted as high as $4.85. Softer Co

are quoted at from $3.15 and $3.40 to $3.45, with the domestic sizes running up to $3.75 and $4.

It is interesting to note the fact that Mr. Saward's latest figures, which give the total output of Anthracite to Nov. 22, give a grand total for 1879 of 23,332,276 tons, against 15,290,927 tons for 1878. At that date, Nov. 20, the weekly shipments amounted to no less than 573,000 in round numbers. The slack trade has made freights rather easier, and there is a slight downward tendency.

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending Dec. 2, 1879:

Hardware.

Baldwin Bros. & Co.
Machinery, pcs. and pkgs., 5
Ball Mr.
Machinery, cs., 10
Barbour Bros.
Machinery, pkgs., 21
Boker Hermann & Co.
Hdw., cs., 9
Hdw., csks., 67
Brett G. E.
Type, bxs., 8
Brown Wm.
Hdw., bx., 1
Bryce Wm. & Co.
Chain, csks., 8
Barkinshaw W. Co.
Hdw., pkgs., 4
Davies & Co.
Hdw., cs., 1
Davies Thos.
Cannel coal, tons, 112
Degrauw, Aymar & Co.
Chains, csks., 10
De Planque E.
Mdse., pkgs., 5
Dolge Alfred,
Steel wire, cks., 5
Dreyfuss, Weiller & Co.
Hdw., cs., 11
Fales T. T.
Gun barrels, cs., 2
Friedmann & Lauterjung,
Mdse., pkgs., 4
Funch, Edye & Co.
Machinery, cs., 1
Godfrey C. J.
Arms, cs., 6
Graef Cutlery Co.
Mdse., pkgs., 3
Hammacher A. & Co.
Hdw., cs., 1
Hecht Bros.
Hdw., cs., 1
Herrmann H. & Co.
Mdse., pkgs., 71
Hildrick A. H.
Chains, csks., 10
Chains, pcs., 2
Hdw., pkgs., 3
Hoe R. & Co.
Mdse., pkgs., 1
Hollis Alfred B.
Guns, cs., 1
Lamarche H.
Arms, cs., 4
Leyland Thos.
Machinery, pkgs., 18
Loswi Edgar,
Hdw., cs., 1
Mason J. W. & Co.
Wire rope, coils, 6
McCoy & Co.
Hdw., cs., 8
McKinless John A.
Hdw., pkgs., 5
Merchants Dispatch Co.
Wire, cs., 8
Guns, cs., 2
Meriden Brittania Co.
Mdse., pkgs., 3
Montgomery J. M.
Hdw., csks, 2
Steel wire, csks., 4
Moore's J. P. Sons,
Arms, cs., 8
Gun caps, cs., 4
Gun caps, pkgs., 5
Gun wadding, cs., 1
Noyes, Smith & Co.
Hdw., cs., 1
Planet Mills Mfg. Co.
Machinery, cs., 8
Rogers H.
Mdse., pkgs., 1
Schoverling, Daly & Gales
Hdw., cs., 5
Schuyler, Hartley & Graham,
Arms, cs., 4
Seager J. Co.
Crank shaft, 1
Stewart A. T. Co.
Machinery, cs., 3
Machinery, drums, 6
Tillotson L. G. & Co.
Wire, lots, 714
Upson, Watson & Co.
Wire rope, coils, 34
Von Cleff & Co.
Whetstones, cs., 8
Wiebusch & Hilger Hdw. Co.
Cutlery and caps, cs., 7
Witte John G. & Bro.
Guns, cs., 2
Mdse., pkgs., 6
Order,
Bolts and nuts, cs, 4
Cannel coal, tons, 218
Caps, cs., 11
Chains, csks., 57
Coal, tons, 602
Files, csks., 2
Grindstones, 40
Gun barrels, cs., 2
Guns, cs., 5
Hdw., bales, 10
Hdw., bdls., 40
Hdw., cs., 40
Iron tanks, csk., 1
Machinery, bx., 1

Iron.

Addie, Richard & Co.
Pig, tons, 220
Baring Bros. & Co.
Bars, 3619
Pig, tons, 1066
Hoop irons, bdls., 340
Bundles, 1626
Old rails, pieces, 550
Cooney Daniel F.
Sheet iron, bdls., 731
Sheet iron, sheets, 1804
Drexel, Morgan & Co.
Punched bar'l ho'ps, bdls., 7992
Hoop iron, bdls., 2927
Elwell Jas. W. & Co.
Old iron, tons, 6
Henderson Bros.
Pig, tons, 100
Irwin, Richard & Co.
Pig, tons, 400
Jackson J. H. & Co.
Bars, 2086
Bundles, 204
Lee, Jas. & Co.
Pig, tons, 839
Lundberg Gustaf,
Bars, 1846
Pig, ingots, 2580
Scrap, bdls., 992
Mayer Bros. & Co.
Old rails, tons, 397
Pig, tons, 750
Milliken & Smith,
Wire rods, bdls., 1557
Morton, Bliss & Co.
Pig, tons, 950
Spiegeleisen, tons, 1050
Ogden & Wallace,
Bars, 6243
Parsons & Co.
Rails, 949
Fish plates, 1898
Phelps, Dodge & Co.
Sheet iron, bdls, 1512
Sheet iron, packs., 500
Pierson & Co.
Bars, 4252
Bundles, 31
Trowbridge's H. Sons,
Bar iron, tons, 54
Scrap iron, tons, 7
Wheeler, E. S. & Co.
Bars, 2836
Whitney A. R.
Pig, tons, 10
Williamson J. & Co.
Pig, tons, 500
Wolff, R. H. & Co.
Lots, 371
Order,
Bar iron, bars, 1896
Bar iron, bdls., 230
Bars, 14,099
Bundles, 41
Coils, 617
Fish plates, bdls., 689
Flange rails, 560
Galvanized iron, cs., 31
Hoop iron, bdls., 2025
Lowmoor iron, bars, 26
Lowmoor iron, bdls., 20
Old car wheels, 400
Old cast iron, tons, 76
Old double-headed rails, pieces, 970
Old flange rails, 5041
Old iron, csk., 1
Old iron, tons, 580
Old rails, 7691
Old rails, pcs., 14,099
Old rails, tons, 2478
Old railway chains, tons, 100
Old wrought iron, tons, 164
Ore, csk., 1
Pig, a quantity.
Pig, csks., 85
Pig, tons, 3143
Plates, 6
Railroad iron, bars, 3781
Railroad iron, pcs., 2323
Rails, 20,013
Rails, pcs, 515
Rails, tons, 507
Round iron, bdls, 1080
Scrap, a quantity.
Scrap, tons, 2341
Sheet iron, bdls., 141
Sheet iron, bxs., 169
Spiegeleisen, a quantity.
Spiegeleisen, tons, 1050
Strip iron, bdls., 159
Wrought iron, tons, 9

Metals.

Agt. Bank of Montreal,
Tin plates, bxs., 398
Bache, Lemon & Co.
Tin plates, cs., 7
Baring Bros. & Co.
Tin plates, bxs., 1663
Bruce & Cook,
Tin plates, bxs., 1050
Byrne Jos. & Co.
Tin plates, bxs., 2835
Condit, Hanson & Van Winkle,
Nickel, bxs., 3
Cort, N. L.
Tin plates, bxs., 133
Dickerson, Van Dusen & Co.
Tin plates, bxs., a quantity.
Elwell Jas. W. & Co.
Yellow metal, lbs., 200
Yellow metal, pkgs., 4
Gilfillan, Wood & Co.
Tin, slabs, 637
Hopkins E. T.
Tin plates, bxs., 110
Mamarche H.
Zinc, csks., 150
Nevada Bank of San Francisco,
Tin, slabs, 2739
Phelps, Dodge & Co.
Tin plates, bxs., 16,980
Black taggers, bxs., 89
Pratt Chas. & Co.
Tin plates, bxs., 740
Walscheid C. Aug.
Bundles, 141
Wheeler E. S. & Co.
Tin plates, bxs., 354
Order,
Black taggers, bxs., 170
Galvan'd tin sheets, caks., 20
Lead pipe, pcs., 16
Old brass, hhd., 1
Old brass and copper, tce., 1
Old lead, csks., 2
Spelter, plates, 17,113
Tin, bdls., 5
Tin, ingots, 4037
Tin plates, 500
Tin plates, bxs., 30,724
Tin, slabs, 762
Yellow metal, cs., 175

Steel.

Baring Bros. & Co.
Old steel tires, a quantity.
Brown William.
Cases, 21
Bars, 6
Bundles, 290
Clarke & Co.
Steel plates, cs., 1
Haigh J. Lloyd,
Wire rods, bdls., 345
Prosser Thos. & Co.
Bundles, 4
Tire forgings, 148
Sanderson & Co.
Bundles, 86
Wolff R. H. & Co.
Pkgs., 26
Woodford W. O.
Bars, 14
Bundles, 493
Cases, 46
Order,
Bars, 9
Bundles, 1,81
Cases, 18
Casks, 13
Old rail'y leaf spri g steel, tons, 150
Old steel, tons, 4

EXPORTS

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending December 2, 1879:

	Quan.	Val.
Copenhagen.		
Sew. mach., cs	4	$250
Lub. oil, bbls.	25	300
Blr. com., kgs	12	288
Belting, cs.	1	250
Hamburg.		
Mf. iron, pkgs.	7	150
Ag. imp., pkgs	27	678
Pitdw'e, pkgs.	6	827
Cop. mtl., bbls.	100	2,000
Rifles, cs.	1	100
Pumps, pkgs.	15	820
Tinware, pkgs	13	250
Cartridges, cs	16	277
Glassw'e, pgs.	16	528
Ptlm., gals.	172,825	15,125
Lub. oil, gls.	23,713	5,017
Hdw., pkgs	138	2,765
Sew. mach., cs	595	8,385
Mach'y, pkgs.	26	3,371
Belting, cs.	2	690
Bremen.		
Ptlm., gals.	772,146	63,850
Lub. oil, bbls.	50	400
S'p'ware, cs.	3	770
Metal g'ds, cs.	1	1,900
Hdw., pkgs.	7	169
Mach'y, cs.	2	340
Rotterdam.		
Ptlm., gals.	510,791	39,594
Amsterdam.		
Ptlm., gals.	181,650	12,715
Dutch East Indies.		
Mach'y, pkgs.	19	600
Ptm., gls.	1,180,000	131,750
Rouen.		
Ptlm., gals.	86,140	5,599
Dutch West Indies.		
Hdw., cs.	23	310
Glassware, cs.	4	69
Revolvers, cs.	3	321
Cutlery, cs.	1	51
Silverware, cs	2	48
Ptlm., gals.	4,597	532
Nails, bxs.	27	455
Liverpool.		
Lub. oil, gals.	5360	763
Hdw., pkgs.	98	3,828
Glass cases, cs	38	380
Sew. mach., cs	7	319
Mach'y, cs.	3	200
Pltdware, cs.	7	450
Glassware, cs.	15	343
Met. goods, cs.	6	880
Metals, cs.	4	200
Ptlm., gals.	501,640	35,110
London.		
Hdw., cs.	22	486
Mach'y, cs.	3	1,000
Glassware, cs.	90	1,700
Ptlm., gls.	1,494,695	125,106
Rifles, cs.	2	592
Car wheels	190	877
Lub. oil, gls.	29,726	5,371
Ag. imp., pkgs	9	80
Bristol.		
Hdw., cs.	9	90
Ptlm., gals.	312,750	21,110
Hull.		
Hdw., pkgs.	59	1,188
Mach'y, pkgs.	2	75
Pumps, pkgs.	18	1,420
Ag. imp., pgs.	14	394
Cork.		
Ptlm., gals.	140,230	12,630
Belfast.		
Lub. oil, gals.	7000	2,800
British North American Colonies.		
Glassware, cs.	49	368
Powder, lbs.	625	143
Coal, tons	878	2,968
Hemp, bales.	25	625
Ptlm., gals.	2250	383
Havre.		
Pitdware, cs.	3	820
Hdw., cs.	5	42
Sew. mach., cs	1	50
Lub. oil, bbls.	155	2,275
Mach'y, cs.	4	500
Ag. imp., pgs	65	4,980
Dunkirk.		
Ptlm., gals.	190,994	14,092
Cette.		
Ptlm., gals.	107,520	$7,536
British West Indies.		
Ptlm., gals.	21,038	2,477
Nails, kegs	183	691
Hdw., cs.	98	1,456
Glassware, cs.	17	147
Tinware, cs.	3	81
Mf. iron, pkgs	11	150
Mach'y, cs.	3	171
G'dstones, cs.	24	153
Cadiz.		
Ptlm., gals.	90,000	10,000
Barcelona.		
Pitdware, cs.	7	1,186
Pumps, pkgs.	20	564
Hdw., pkgs.	6	441
Mf. iron, pkgs	40	466
Nails, kegs	8	38
Bilbao.		
Nails, kegs	12	50
Ptlm., gals.	248,150	24,800
Brasil.		
Ptlm., gals.	2031	211
Cutlery, cs.	66	945
Ag. imp., pkgs	10	39
Hdw., cs.	78	1,175
Shoe nails, bxs	14	106
Glassware, cs.	5	40
Trieste.		
Ptlm., gals.	229,250	29,635
Japan.		
Ptlm., gals.	599,000	60,000
Coal, tons	125	625
Cuba.		
Cars	20	1,145
Hdw., cs.	144	2,784
Coke, hhds	25	45
Mach., pkgs.	107	3,199
Grindstones	42	106
RR matls., pgs	698	1,975
Blr. tubes, bxs	2	55
Cop. tubes, cs.	1	180
Mf. iron, pkgs	837	8,317
Ptlm., gals.	7055	702
Sew. mach., cs	43	350
Mach'y oil, gls.	540	273
Glassw'e, pgs.	12	153
Nails, kegs	134	443
Nails, bxs	250	750
Pumps, pkgs.	3	730
Wire g'ds, cs.	5	100
Mexico.		
Ptlm., gals.	15,020	1,913
Carbines, cs.	1	106
Cartridges, cs	12	628
Pistols, cs.	1	400
Sew. mach., cs	128	2,355
Mach'y, cs.	133	4,468
Wire g'ds, cs.	31	350
Nails, pkgs.	15	62
Ag. imp., pkgs	13	43
Tin plate, bxs	25	175
Mf. iron, pkgs	32	450
Ptlm., gals.	1300	180
Glassware, cs.	25	378
Zinc, bbls.	4	93
Revolvers, cs.	1	281
Pistol st'ks, cs	2	454
Hdw., cs.	135	2,945
Pumps, pkgs.	2	70
Mach'y oil, gls	90	45
Cutlery, cs.	14	704
Fire-arms, cs.	6	6,644
RR m't'ls, pgs.	31	473
Nails, cs.	5	56
United States of Colombia.		
Mach'y, cs.	5	258
Lard oil, gals.	90	76
Cartridges, cs	6	217
Cutlery, cs.	36	757
Shot, kegs	16	129
Glassw'e, cs.	41	427
Hdw., cs.	55	1,187
Mf. iron, pkgs.	43	587
Ptlm., gals.	1460	225
Carbines, cs.	2	200
Sew. mach., cs	37	1,050
Powder, lbs.	962	203
Pitdware, cs.	8	834
Hayti.		
Ptlm., gals.	6445	761
Glassw're, cs.	24	232
Nails, kegs	36	184
Cutlery, cs	1	500
Mach'y, cs.	3	50
Nails, kegs	12	49
Hdw., cs.	7	376

OLD METALS, PAPER STOCK, &c.

The market for Old Metals is rather slack this week, December being usually a dull month in this branch of trade. There is little to note in Rags and Paper Stock since our last review. The market is active and prices are firm at our quotations.

The purchasing prices offered by dealers for Old Metals are as follows:

Copper, heavy	per lb.	$0.17½	@ .18½
Copper Bottoms	"	.15	@ .16
Yellow Metal	₩ lb	.03½	@ .09
Brass, heavy	"	.12	@ .13
Brass, light	"	.08	@ .09
Composition, heavy	"	.15	@ .16
Lead, solid	"	.04	@ .04½
Tea Lead	"	.04	@ .04½
Zinc	"	.03½	@ .03¾
Pewter, No. 1	"	.21	@ ....
Pewter, No. 2	"	.07	@ .08
Wrought Iron	per ton	28.00	@ $32.00
Light do	"	16.00	@ 18.00
Stove Plate	"		@ 12.50
Machinery do	"		@ 15.00

The prices current for Rags, &c., are as follows:

Canvas, Linen	per lb.	3½c.	@ ....
White Cotton, New	"	4½c.	@ ....
" No. 2	"	2½c.	@ ....
White, No. 1	"	4½c.	@ c.
" No. 2	"	3 c.	@ c
Seconds	₩ lb.	1¾c.	@ ..
Mixed, Woolen	"	2 c.	@ 3 c.
Soft, do	"	1¢ c.	@ c.
Mixed Rags	"	2 c.	@ 3 c.
Gunny Jagging	"	3 c.	@ ....
Jute butts	"	2¼c.	@ ...
Kentucky bagging	"	2¾c.	@ ...
Book Stock	"	2½c.	@ 2¾c.
Newspapers	"	1¼c.	@ 2 c.
Waste Paper and Scraps	"	¾c.	@ ...
Kentucky Bale Rope	"	4 c.	@ ....
Tarred Shaking	"	1 c.	@ 1¼c
Grass Rope	"	2½c.	@ 2¾c

PHILADELPHIA.

(*By Telegraph*).

PHILADELPHIA, Dec. 3, 1879.

Sales of new Iron and Steel Rails at $2 @ $3 per ton advance. Market strong.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, December 2, 1879.

Pig Iron.—The market shows no special change of feature, although with a more active demand and numerous inquiries sellers are firm, and for some descriptions ask higher prices. The irregularity noted in our recent reports still continues, and sales during the week have been made as low as $22.50 for English Gray Iron up to $29.50 for same grade; best brands of American standard makes are firmly held, and full prices are readily obtained, while anything new to the market is difficult to move at large concessions in price. The general outlook seems to denote higher prices in the near future; the requirements of consumers are large, and orders must be placed, if not this month, certainly early in the new year. The feeling is becoming prevalent that there is little to be gained by delay, and whenever sellers can be found at current rates for forward delivery, buyers are quite willing to place their orders. As we said before, Iron can be bought at all sorts of prices, but standard brands are difficult to secure in quantity, even at extreme quotations. There appears to be no accumulation of stock, and with an absolute certainty of a heavy demand, holders show no anxiety in regard to the future. Foundry Iron is comparatively dull; furnaces recently gone into blast with no established reputation for their products find buyers careless about giving orders even at low prices, but this is probably only temporary, and as soon as the market begins to move, parties will be less fastidious as to brand. Another disturbing element is in the offerings of foreign Iron. The quantity on the spot is not important, but the efforts of parties to find a market for it as it arrives creates a feeling that there may be a great deal to follow, so that buyers are timid until they see what the result is going to be. It is impossible to give any correct idea of the quality of this Iron; some brands are said to turn out well, but for these high prices are obtained, so that, quality considered, it is doubtful if there has been anything gained by using the imported article. Sales of English Iron are reported at $22.50 @ $25 ex ship; Scotch at $24 @ $26, but there is no established price, and sales are matters of private arrangement between buyer and seller. Bessemer is decidedly higher, and $30 is bid without inducing a sale. For Lehigh brands, Mottled and Gray Forge, are very scare and command full prices, and in many cases an advance of $1 per ton has been paid over the rates current two weeks ago. We quote No. 1 Foundry, $28 @ $30; No. 2 do., $27.50 @ $28; Gray Forge, $27 @ $29.50; Mottled, $26 @ $27. Charcoal Iron is scarce and held at $40 and upward. Sales in considerable quantity have been made to-day for spring delivery on the basis of $28 at furnace for Gray Forge, and $28.50 for No. 1 Foundry.

Blooms.—Continue scarce and consumers have to pay full prices in order to secure supplies. The following may be regarded as average quotations, viz.: Sunken Scrap Blooms (2464 lb), $55 @ $57; Northern Ore Blooms (2240 lb), $52 @ $54; best quality Charcoal Billets (2240 lb), for wire and steel purposes, $80 @ $85; Bars, $85 @ $87.50; Sheet Iron Blooms, cornered (2464 lb), $75 @ $80; Cold-blast Charcoal Plate Blooms, $75 @ $77.50; run out Anthracite, $67.50 @ $70.

Muck Bars.—A fair amount of business has been done at about $48 at mill, but the demand is not quite as active as it was some time ago. Holders are firm, however, and there is no disposition to shade prices, and $48 is a minimum figure for a good article.

Structural Iron.—There has been a fair demand during the week, and prospects for spring trade are quite favorable. Prices in some cases are a little unsteady, however, and desirable orders can be placed at some concessions from quotations, although manufacturers are very discriminating in their selections of business. The following may be regarded as ruling rates for small lots, viz.: Angles, 3.6¢ @ 3.7¢; Beams, 4¢; Channels and Tees, 4.2¢.

Plate and Tank Iron.—The demand continues satisfactory and prices are steady and firm. There has been more inquiry than usual, and there are indications of a heavy consumption during the next six months. Shipbuilders complain that the advance in prices has deprived them of valuable orders, but from the nature of the inquiries recently made it is thought there will be some activity in this line at an early date. In the meantime manufacturers have plenty of work on hand, and are in no way disposed to make concessions in prices, which are firm. Tank, 4¢; C. No. 1, 4¼¢; C. H. No. 1 Shell, 4.5¢; Flange, 5.5¢; Solid Fire-box, 6.5¢; Best Bloom, 7¢.

Sheet Iron.—There is no material change in this department; business holds out better than usual, and many parties appear desirous of placing orders for spring delivery. The demand is especially active for thin sheets, but there is no difficulty in finding a market for all descriptions. The following quotations fairly indicate the state of the market, but in many cases higher prices are demanded: Common Sheet, No. 20 to 23, 5.4¢ @ 5.6¢; No. 24 to 28, 5.7¢: Best Refined Sheet, No. 25 to 28, 5.7¢ @ 6¢; No. 16 to 24, 5.7¢ @ 5.8¢; Refined Plates or Blue Annealed, 5-16 to 16, 4.4¢; 17 to 19, 4.5¢; Best Bloom, 26 to 28, 7.5¢; 16 to 24, 7¢ @ 7.1¢; Best Bloom, 7.3¢. A Patent Planished, 11¢; B Patent Planished, 10¢; Best Blooms, Galvanized, 10 % discount; second quality, 20 %. As a matter of interest to the trade we may mention that N. & G. Taylor & Co., of Philadelphia, are receiving direct from Cronstadt, Russia, a large shipment of Sheet Iron, said to be the first direct shipment to this port in 15 years.

Bar Iron.—There is no change of special importance, but there is a strong tone to the market, and, with an unusually heavy demand considering the season, holders are firm, and for future delivery not disposed to make quotations. The advance in prices and the firmness in the English market will prevent importations for the present, so that buyers begin to realize that the chances of a decline are daily growing smaller. There is, therefore, decided urgency to place orders when it can be done at current rates, but, as before stated, sellers are unwilling to contract for more than two or three weeks' work in advance. The market may be quoted steady and firm at 3¢ @ 3.2¢.

Steel Rails.—The market is again higher, and buyers are said to have offered as high as $70 for round lots, early delivery. Sales of small lots have been made at about $65, at mill, but there is great difficulty in placing orders in quantity, as the mills are full of work, and therefore unwilling to enter into further engagements for the present. We have not heard of any large transactions, and quotations are nominally $65 and upward, according to delivery.

Steel Blooms.—Sales are reported of 50,000 tons for shipment from Germany, but it is quite likely that this refers to the total transactions during the past three or four months. About 25,000 tons have been placed here at $46, but the quotation to-day is much higher, say $50 @ $52, but, as the purchases were made some time ago, parties can afford to shade prices if there is any necessity for it. English Blooms would cost still higher prices, so that imports from that source are not expected at present. It is reported on good authority that a prominent company has offered $70 for rails made from imported Blooms, providing deliveries are reasonably prompt. A sale of 10,000 tons Blooms has been made here to-day, said to be at something over $50.

Iron Rails.—The market remains firm, and sales during the week have been at full prices, say $52 @ $55 at mill, according to section of rail. One 600-ton lot of 30's was placed at $55—and a number of small lots of 56's at $52 @ $54, according to deliveries and terms of settlement. Buyers are making inquiries for spring deliveries, but as the mills are well supplied with orders, manufacturers are not anxious for business unless at full prices. Some parties are offering to sell at $52, January, February and March, but prompt cash would be required. The demand for light rails has been very urgent during the past week, and prices are firm as above quoted.

Old Rails.—There is no change in quotations, and although there is more inquiry, prices are unsettled and irregular. Sales have been at $31 @ $32, with the majority of transactions at $31.50, which to-day appears to be as high as can be obtained. Advices from abroad are strong, but the New York market is said to be weaker, and as several lots have been rather pressingly offered from there buyers are timid, and appear disposed to wait further developments before purchasing heavily. The anticipated use of Steel Blooms at some of the leading mills is probably one cause of the weakness, but in any case there is not that strength in the market which appeared some time ago.

Scrap Iron.—The arrivals from abroad, here and in New York, appear to be large, and prices in consequence are a trifle easier. Sellers are more numerous, and although full prices have been obtained for selected qualities, other descriptions are lower, say $33 @ $35 for Wrought, and $21.50 @ $23 for Cast.

Nails.—The market is steady and $3.70 is regarded as an inside figure for wholesale lots.

PITTSBURGH

Office of *The Iron Age*, 77 Fourth Avenue, PITTSBURGH, PA., Dec. 2, 1879.

While in some branches of trade business continues quite active, as a rule it is slow as compared to what it was a few weeks ago, and it is probable the lull which has set in will continue until about the middle of January, when orders for the spring trade commence to come forward. The outlook for 1880 is considered very encouraging; manufacturers expect that the demand for goods from January to July next will exceed that of the half year just drawing to a close, and already we hear of a good many contracts of one kind or another being made for next year, and if sellers were willing the number could be largely increased. It is worthy of mention that our manufacturing interests have not been in so satisfactory a condition for many years, and with the exception of apprehension in regard to labor troubles, the outlook possibly never was more encouraging and promising.

Pig Iron.—While the volume of business reported the past week was comparatively light, it was all that could be expected in view of the recurrence of the national holiday, and then it is well to bear in mind that the purchases for several weeks preceding had been very large, averaging from 10,000 to 15,000 tons per week. The tone of the market, especially for standard brands—for which there is an increasing demand and which are in light supply—continues firm, and the fact that there have been so many sales made recently for delivery next year indicates that consumers do not expect any decline, but, on the contrary, are apprehensive of a further advance. Late and reliable advices from England report an advance of $2 @ $3 ₩ ton in English Bessemer, the effect of which will be to stop importation to this country. It is not expected that the demand from now until the close of the year will be active, although we apprehend that there would be no difficulty in placing standard brands for delivery next year at full prices, as they are known to be in light supply and are more likely to advance than decline. Good Forge Irons may be quoted at $30, 4 mos., for Neutral; $32 @ $33, 4 mos., for Red-short, and $35 for Bessemer. Foundry Irons are selling in a small way at $30, cash, to $35, 4 mos., according to quality. Very little doing in Charcoal Iron; not much here, and there appears to be but little inquiry.

Manufactured Iron.—The situation remains much the same as noted in our last report, while orders have slackened up. The mills, as a rule, are all busy, and prices are steady at card rates. Merchant Bars, for well-assorted orders, 3¢, 60 days, 2 % off for cash. Sheet Iron, 4.50¢, 60 days, for No. 24; Plate Iron, 3.80¢, 60 days, with some mills declining to sell below 4¢. Skelp Iron is not so much inquired for, owing to a falling off in the demand for Pipe, but prices are still maintained, 3.50¢ @ 3.60¢, notwithstanding the predictions of some that the business was likely to be overdone.

Nails.—The demand continues light, as it always is at this season. As stated in our report of last week, the indications are that there will be a very large spring trade, as stocks in hands of jobbers generally are light, while it is confidently expected that the consumption will be larger next spring and summer than for a number of years past. Prices are steady at $3.65, 60 days, 2 % off for cash, and an abatement of 10 % per keg on lots of 200 kegs and upward.

Muck Bar.—While there have been but few sales reported recently, the market continues steady and prices are still maintained in sympathy with Pig Iron. We continue to quote at $50 @ $52 per ton.

Horse and Mule Shoes.—While business continues quiet, there is still more or less inquiry for small lots, and prices are steady at former quotations, $4 @ $5, cash, for 100-keg lots.

Cinder.—There have been no sales reported recently, in the absence of which we continue to quote at $3.25 per ton; the last sale reported was at this figure.

Railway Spikes and Bolts.—There have been some large contracts made recently, mostly for delivery next year, and prices are firm but unchanged at 3½¢ per lb., 30 days, for Spikes, and 5¢ for Bolts.

Wrought Iron Pipe.—The demand for gas and steam pipe has fallen off somewhat, but the mills are still busy, as they were nearly all sold considerably ahead, and while prices are not as strong as they were a month ago they are still maintained. Discounts 25 % off regular list. Boiler Tubes, 10 %. Oil Well Casing, 85¢, net; do. Tubing, 30¢, net.

Steel.—The demand for all kinds of Merchant Steel continues quite active; the mills are busy, and buyers find it difficult to place large contracts for near deliveries. This has been the biggest year in the history of the Steel business of Pittsburgh, and the indications are that the business of 1880 will exceed that of 1879.

Rails.—We can report a sale of 6000 tons of Steel Rails, understood to have been bought by the Northern Pacific, for delivery next year, at $65, cash, at mill, and it is rumored that an order has been placed here for 15,000 tons for the Denver and Rio Grande Railroad, to be delivered at the rate of 2000 tons per month, but the price has not transpired. The market continues firm, owing to the upward tendency in the price of Bessemer Iron. *Old Iron Rails.*—There have been no recent sales here, in the absence of which we continue to quote at $36 @ $38, nominally.

Scrap.—Wrought Scrap is less inquired for and prices are easier—$38 @ $40 ₩ ton, net. Car Springs and Car Axles continue in good demand and still command full prices—$42 @ $43, net, for the latter, and $35 for the former; Wrought Turnings, $20, net; Boiler Plate, $38 @ $40, net; Old Car Wheels, $32 @ $33, gross; Cast Borings, $17 @ $18, gross.

Coke.—The demand continues to keep up remarkably well, and notwithstanding the production has been largely increased within the past year or so, there has been no accumulation of stock. The consumption the present year has been the largest, no doubt, ever known. Prices steady at $1.40 @ $1.50 ₩ ton, delivered free on cars at ovens, for round lots, and $1.60 @ $1.75 in a small way.

Coal.—There was water enough in the river yesterday to let out four small tows of Coal for Cincinnati, and all the boats that took out tows on the freshet of two weeks ago will be enabled by this last rise to get back nicely with their tows of empty barges. Lump Coal is selling at 5¢ per bushel here.

Window Glass.—There is still considerable inquiry, notwithstanding this is always the dull season, and manufacturers have been unable since starting up, September 1st, to accumulate any stock. Prices firm; discounts may be quoted at 60 to 60 and 5 %, with small orders more acceptable than large ones, and a very general disinclination on the part of manufacturers to contract for future delivery.

Petroleum.—On Saturday afternoon the market very unexpectedly took a dart upward; yesterday it went still higher, certificates at one time, touching $129½, equal to $132½ for shipment. The advance, as might be expected, was the result of speculation, as there is nothing in the general position of the market to warrent it, although there are those who have strong faith in the immediate future—some predict that the price will be $2 before the 1st of April. In regard to production and consumption there has been no material change in the situation tion recently. While development always slackens up during the winter season, there are a good many new wells going down, but "strikes" do not appear to be of such common occurrence.

BOSTON.

NOVEMBER 29.—The demand for *American Pig Iron* at this point still lags, and prices continue to droop. We quote shipping-port prices nominal at $26 @ $27 for No. 1 X; $25 @ $26 for No. 2 X; $24 @ $25 for Gray Forge, and about $24 for White and Mottled. There continues to be as much firmness as heretofore, however, among the agents of makers of iron, and high prices are anticipated later on. *Scotch Iron* continues very dull, and the stocks here and in New York weigh heavily on the market. *Manufactured Iron* is in fair demand from the stores, and though some dealers who have good stocks are disposed to cut prices a little, the mills are generally full of orders and not disposed to make any present concessions in rates. *Copper* has been firm at our last quotations, though the aggregate of transactions has not been large. The spot price for large lots of ingots is 21¾¢, and sales for February and March delivery have been made at 22½¢. Manufactures are without material change, and we continue to quote: Copper Sheathing at 28¢; Braziers at 30¢; Bolts, 30¢; Bottoms, 35¢; American Yellow Metal Sheathing, 17¢ @ 18¢; Yellow Metal Bolts, 20¢, and English do., 13¼¢ in bond. *Antimony* is quiet and steady at 17¢ @ 18¢. *Lead* is firm, and we quote 5¾¢ for large lots of Pig, and the Boston store price is 6¢. Manufactures are firm, quoting Lead Pipe, 7½¢; Tin-Lined Pipe, 15¢; Bar Lead, 7¢; Sheet Lead, 8¢; Block Tin Pipe, 40¢; all of these are subject to the usual trade or 10 % discount. *Spelter* is quiet at 6¼¢ @ 6¾¢ for car-load lots, and 6¾¢ @ 6¼¢ from store. *Sheet Zinc* firm, quoting the Boston store price at. Tea has

settled down to about 21¼¢ @ 21½¢ for Straits. Banca at 23½¢; and English L. & F. at 21¢ @ 22¢.—*Commercial Bulletin.*

CINCINNATI.

Messrs. E. L. HARPER & Co., under date of Dec. 1, write as follows: The week's tonnage is large, a number of round sales having been closed, notwithstanding buyers generally are inclined to hold off as usual at this season of the year. This time they appear especially determined to reduce purchases to the smallest amount possible. On the other hand, the great majority of sellers will not consider anything below rates that have been current, preferring to suspend sales rather than shade figures which they are confident will be readily obtained after January 1. These conflicting positions have caused a decided stand-off, and the market is very irregular and difficult to report with any degree of accuracy. We therefore deem it best to omit quotations.

ST. LOUIS.

ST. LOUIS, MO., NOV. 29, 1879.

Trade for the season is unusually active, and prices generally are well maintained. The prospects for a large shortage in the supply of Car Wheel Irons are beginning to be realized by wheel makers, and many makers are now anxious to place orders for next year's delivery at the then market prices to insure their supply.

CHARCOAL HOT BLAST.

Missouri	$15.00 @ .....
Southern	34.00 @ .....
Hanging Rock	None offering.

COKE AND COAL.

Missouri	None offering
Southern, No. 1	32.00 @ 33.00
Ohio River, No. 1	32.00 @ 33.00
Jackson County, No. 1	32.00 @ 33.00
Hocking Valley, No. 1	32.00 @ 33.00

No 2, $1 to $2 per ton less.

COLD BLAST.

Missouri	35.00 @ 37.00
Southern	38.00 @ 40.00
Ohio	40.00 @ 42.00

IRON ORE.

Iron Mountain	7.50 @ 8.00
Southwest	7.00 @ 7.50
Ore for fix	9.00 @ ....

LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of December 1, write us as follows: Iron continues very dull, and prices must be regarded as nominal, and very few sales have been made on which to base quotations. We revise quotations to correspond with the few sales made. Most sales are still for cash.

FOUNDRY IRONS.

No. 1 Hanging Rock, Charcoal	$38.00 @ 40.00
No. 2 " "	36.00 @ 37.00
No. 1 Southern, Charcoal	36.00 @ 37.00
No. 2 " "	34.00 @ 35.00
No. 1 Hanging Rock, Stonecoal and Coke	36.00 @ 37.00
No. 2 Hanging Rock, Stonecoal and Coke	35.00 @ 36.00
No. 1 Southern, Stonecoal and Coke	36.00 @ 37.00
No. 2 " "	35.00 @ 36.00
"American Scotch"	31.00 @ 32.00
Silver Gray	30.00 @ 31.00

MILL IRONS.

No. 1 Charcoal, Cold-short and Neut'l.	32.00 @ 33.00
No. 1 Stonecoal and Coke, Cold-short and Neutral	31.00 @ 32.00
No. 2 Stonecoal and Coke, Cold-short and Neutral	30.00 @ 31.00
No. 1 Missouri and Indiana Red-short	32.00 @ 33.00
White and Mottled, Cold-short and Neutral	25.00 @ 26.00

CAR WHEEL AND MALLEABLE IRONS.

Hanging Rock, Cold-blast	45.00 @ 50.00
Alabama and Georgia, Cold-blast	40.00 @ 43.00
Kentucky, Cold-blast	40.00 @ 45.00

W. B. BELKNAP & Co., Iron and Steel merchants, Nos. 113 and 115 West Main street, under date of November 29, write as follows: Trade holds its own in regard to volume, but there is a weakish feeling in prices, which manifests itself rather more in anxiety to sell than in any especial concession from established prices. Buyers are evidently waiting to see what the usually dull month of December will bring forth, but the confidence in a large demand later on is great enough to induce heavy purchasing should a cut from the present card be offered with the privilege of future delivery. The advance on Nails is held satisfactorily, which may be due, however, in part to the limited supply thus far run out of Wheeling. We take it that there are no great quantities bought at the extreme low prices, but enough orders were booked at intermediate figures to demoralize the situation somewhat should holders become apprehensive of the future. There is a lull in the demand for wagon and carriage goods incident to early winter, but the plow makers are coming in for a larger share than ever of their necessary material and the railroads are still extremely busy, both of which help the demand for immediate consumption.

BALTIMORE.

W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, Baltimore, report us the following under date of December 1: Trade rules about the same as last reported, and with prices fully maintained as per annexed quotations:

Ref. Bar Iron, 1 to 6 by ¾ to 1	℔	₵	3¼	@	3½¢	
" " 1 to 4½ by 1¼ to 2	℔	₵	3¼	@	3½¢	
" " ¾ to 2, Round and Square	"		3½	@	3½¢	
Hoop Iron, 1¼ wide and upward	"		3½	@	4 ¢	
Band Iron, from 1¼ to 4 in. wide	"		3½	@	3¾¢	
Horse-shoe Iron	"		3½	@	3¾¢	
Norway Nail Rods	"		5	@	5½¢	
Black Diamond Cast Steel	"		12½	@	13 ¢	
Machinery Steel	"		7	@	8 ¢	
Cast Spring Steel	"		6	@	6½¢	
Homogeneous Steel Plate	"		6½	@	7 ¢	
Common Horse Nails	"		10	@	14 ¢	
R. R. Spikes, 5½x9-16			3½¢	@	3¾¢	
Perkins' Horse shoes, ℔ keg of 100 lbs.					$4.12½	
" Mule shoes					5.12½	

		10	9	8	7	6
Putnam Horse Nails	℔	₵	20	21	22	23	25¢
Globe Horse Nails	℔	₵	20	21	22	23	25¢

Less list discount to the trade.

R. C. HOFFMAN & Co., Iron and Commission Merchants, report the Pig Iron market as follows under date of December 1: The Iron market remains about the same as last report, the demand being fully up to the supply and prices unchanged. We quote:

Baltimore Charcoal Wheel Iron	$38.00 @ 40.00
Virginia " "	39.00 @ 42.00
Anthracite No. 1	29.00 @ 30.00
" No. 2	28.00 @ 29.00
" No. 3	27.00 @ 24.00
" Mottled and White	26.00 @ 27.00
Charcoal, C. B. Blooms	75.00 @ 80.00
" " Billets	80.00 @ 85.00
Refined Blooms	60.00 @ 65.00

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, writes as follows under date of December 1: There have been sales above and below the quotations as given below; still it would be difficult more fairly to represent values. Old Dominion Nails are firm at $3.70 for standard sizes, and Tredegar Horse Shoes at $4, and Mule Shoes at $5 command large orders. The Pig Iron market is unusually active for the lateness of the season.

American Scotch Pig Iron	....	@ .....
Anthracite, No. 1	$29.00	@ 30.00
" No. 2	28.00	@ 29.00
" No. 3	26.00	@ 27.50
" Mottled and White	25.00	@ 20.00
Coke, No. 1	30.00	@ 31.00
" No. 2	29.00	@ 30.00
Va. Warm-blast Charcoal, Cold-short	29.00	@ 33.00
Cold-blast " Neutral	39.00	@ 41.00
Old Rails	29.00	@ 30.00
Wrought Scrap No. 1	27.00	@ 28 00
Machinery " No. 1	23.00	@ 24.00
Richmond Refined Bar Iron, Stand'd.	3¼	@ ....
Horse Shoes, Tredegar	3.75	@ .00
Mule " "	4.75	@ 5.00
Old Dominion Nails, (standard size)	3.60	@ ....

Freights to New York, $1.90 for 2240 lbs. by sail.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(*From our Regular Correspondent.*)

LONDON, ENG., NOV. 17, 1879.

THE IRON MARKET,

as a whole, may be said to be in a very steady and fairly satisfactory condition in every part of this country, although there are in several districts incipient wages agitations which seem to threaten interruptions of the pleasant progress which has recently been made in business generally. There is, however, an evident inclination on the part of both masters and men to agree to the establishment of sliding scales for the regulation of the rates of wages, under which strikes and lockouts may be obviated and the remuneration of the men made proportionate to and coincident with the profits of the employers. Should such a happy mean meet with approval in the principal iron and coal working localities, the nation will be a clear gainer, and we ought to be spared the recurrence of those hideous and wasteful struggles between capital and labor which disfigured the 1870–3 period, threw millions of money away, ruined hundreds of capable and honest persons, and diverted much of our trade into the hands of foreign competitors. There are, it is true, some few objections to the sliding scale *per se*, but I am not without the hope that the employers will be willing to sink minor considerations in order to attain the chief end of the scheme. Such a consummation is most devoutly to be wished. At the time of this writing, however, the ironmasters, both of Scotland and South Staffordshire, are confronted with possible disputes with their men, and in both districts there is, consequently, much uncertainty as to the course which prices may take in view of a contingent limitation of production. An effort will be made to bring about a compromise in each instance, and there are those who entertain the expectation that open ruptures will be avoided. I much regret to observe that the existing change for the better in the metallurgical industries has already had the effect of bringing into fresh notoriety agitators whose names have been absent from the newspapers for several years past, but who did much to destroy the national prosperity during the years to which I have already alluded. Some of these fellows disappeared most mysteriously when trade and the power of the unions began to wane, and have not been heard of since. Now, however, like poisonous fungi they reappear, and will doubtless again do their best to delude their easily deceived fellow workmen. It would pay the artisans as a body to export these fellows to some miserable spot where yellow fever or some other swift and sure plague incessantly rages. This matter is, I venture to think, one of the hardest nuts we have to crack, and unless the evil be remedied we shall indubitably suffer much therefrom. No sensible man will, or need, deny to workingmen the perfectly legitimate right of combination for mutual benefits, but I presume that their best friends must admit that as at present mismanaged the trades unions do more harm than good. Recurring, however, to the subject more immediately under notice—the state of the iron trade—I may state that the market is everywhere hopeful and fairly strong. Manufacturers have generally put up their quotations for finished irons, and are quite firm in their adherence to the new list rates. Buyers don't seem to view the matter precisely in the same light, and are holding back their specifications with the avowed object of waiting until the "collapse comes," for which revulsion they say they won't have to exercise any particular show of patience. They are not very wholesouled in the maintenance of these views, nevertheless, and I should say that the venders have decidedly the whip-hand. A little consideration, and some slight acquaintance with the actual state of things at home and abroad, ought to convince purchasers that this is unmistakably the case. It is almost an impossibility that there could be any fall in ores and pigs for the next six months or so. Hence, the mill and forge owners have no room for "coming down," no matter how much they might be disposed to make concessions. Under such conditions, consumers and other purchasers ought to, and no doubt will, see that they had best place their orders as they arise, and not defer them to some future period, of which they now know, nor can foresee, nothing whatever beyond the almost certain fact that lower figures cannot well prevail. At the same time, I am willing to concede that there has been a smaller amount of business done in many kinds of iron during the past week, and I do not doubt that it is within the bounds of possibility that a limited turnover may characterize the remaining weeks of this year. I do not suppose, in spite of that contingency, that lower selling rates will come about. The closing of the Northern navigation may restrict shipments to the Baltic ports, but to the States, India and other larger buyers we shall continue to send larger consignments for some months ahead, by the end of which period the spring deliveries to Northern Europe, &c., may be commenced. There may be no especial inflation of business during the winter, nor, on the other hand, is it probable that there will be any marked retrogression from the relative strength which now pervades our iron and hardware industries. I hear from

NEW SOUTH WALES

that trade remains very quiet there, as well as in the other Australian colonies. The market, indeed, has been oversupplied with almost all descriptions of goods, every manufacturer in Europe and America being apparently under the impression that Australia is equal to the consumption of an unlimited quantity of his goods. The Sydney Exhibition is likely to be a success in the long run, although on the opening day it was very incomplete in the majority of the sections. The English divisions were most forward, and are said to be exceedingly replete with hardware and machinery. Your section is strong in many respects, but rather weak as regards agricultural implements and machinery—a matter for some surprise to those who don't know the existence of the impression on your side that "the Sydney show was got up for the English manufacturers." Some time would probably elapse before the whole of the exhibits were permanently arranged.

AMERICAN MANUFACTURES

still command some notice in the English trade papers, partly commendatory and partly not wholly commendatory. A correspondent of the *Ironmonger*, writing from Wolverhampton, reports that one of the best results of the trade revival is the "clearing out" of the American travelers who had been stumping the district. Another correspondent, who signs himself a "Colonist," of the same paper speaks at some length on the subject of the marked preference shown for your manufactures in Australia and New Zealand. The latter communication is, perhaps, worth reproducing in your columns. I myself hear that a merchant here who a short time ago received a consignment of American heating and cooking stoves, has sold the whole at a profit and intends to go more fully into the trade. Many of the purchasers were ironmongers in the rural districts. American electro-plate is reaching this side in small lots, but if the statement in last week's *Ironmonger* be well founded, your manufacturers ought to be careful not to sacrifice quality to any other consideration whatever.

SCOTCH PIG IRON

is decidedly stronger on the week. Why it is so I do not pretend to surmise, but I suppose the change is attributable to the larger turnover, and the more favorable prospects of the founders and shipbuilders. Statistically, the market is decidedly in a worse position, for there are 372,100 tons in Connal's stores, or 7509 tons over last week, and 172,000 tons more than on this date last year. Besides this, there are 97 furnaces at work, against 94 last week and 87 a year ago. Still again, the bank rate is now 3 per cent., whereas it was 6 per cent. 12 months back. In spite of these points, prices are rather better all round, hence we must conclude that the speculators are again "laying the flattering unction to their souls"—either that there is about to be a big strike or that your demand is destined to revive considerably. Those who live will see. In the meantime John E. Swan & Bros. (Limited), quote ballast pig at 45/ alongside ship, and show that Middlesboro pig is being imported into Scotland in limited quantities only. William Colvin & Co. reported a more favorable market at Glasgow at the beginning of the week, and a steady firmness subsequently. James Watson & Co. reported on Friday, at the close of the week's business, as follows: "The price of Scotch pig iron warrants has been irregular this week, but on the whole very firm. On Monday the market opened at 55/6, receded to 54/8, then rallied to 55/6 and closed at 55/1½ per ton. On Tuesday the market opened weak at 54/6, improving steadily to 54/10½, cash. On Wednesday the opening price was again flat at 54/6, finishing strong at 55/1½ per ton, while yesterday the market was irregular but firmer, with a good business done from 55/1 @ 56/4, cash, closing at 55/9 per ton. To-day a moderate business was done between 55/9, 55/4½ and 56/3, cash, closing buyers at the latter figure 8 days, and sellers at 56/4½ per ton. The shipments last week were 10,128 tons as compared with 8547 tons for the corresponding week of 1878." We quote:

	No. 1.	No. 3.
G. M. B., at Glasgow	57/	53/6
Gartsherrie, "	60/	56/6
Coltness, "	63/	56/6
Summerlee, "	60/	54/
Langloan, "	60/	55/
Carnbroe, "	59/6	54/6
Calder, at Port Dundas	59/6	54/6
Glengarnock, at Ardrossan	61/	54/6
Eglinton, "	58/	53/6
Dalmellington, "	58/	53/6
Shotts at Leith	60/6	55/6

IN CLEVELAND

there is a steady market and a good demand for pig at the undermentioned quotations. Surprise is felt that your consumers should allege that they have found Cleveland pig cold short. It is, of course, not equal to Scotch, but it is used here pretty largely, even for ranges and other stove castings. Current rates are:

G. M. B.

No. 1 Foundry	47/6	Mottled	42/
2 "	45/	White	40/
3 "	42/6	Kentledge	47/
4 "	42/6	Cinder	....
4 Forge	42/6		

All G. M. B. and net cash, f. o. b. in Tees.

THE BESSEMER MANUFACTURERS

here are naturally rather jubilant in connection with the recent decision of your "Judge" French, whose views on the bloom question exactly coincide with their own. They hail the award in favor of the lower rates of duty with much pleasure, as being an indication of a more equitable ruling in customs contentions than had for a long time been known on your side. Since Mr. French's decision was given, several large orders for Bessemer blooms and billets have been received here from Philadelphia, New York and Boston. One such commission is understood to have been for 10,000 tons in a line, and if I am correctly informed it has been placed with Steel, Tozer & Hampton, near Sheffield. That firm is fully occupied, and has lately been compelled to decline orders for wire billets and the like. Whether any large business in blooms will spring up between the United States and this country or not is, I think, quite problematical. A few more or less bulky commissions may be given out within the next few months, but I should suppose that the trade would scarcely survive any very considerable rise in our prices. If that is the case the end is already approaching, seeing that quotations are gradually stiffening in all directions for every description of Bessemer product. I very much doubt if there are more than about three concerns in Great Britain which could or would undertake to deliver 20,000 tons of blooms at your ports within the period between this and March 31st next, unless the prices were made at least £5. 15/, or perhaps up to £7 per ton, f. o. b. Such figures will necessarily tend to kill the newly-developed business in this respect, so far as this country is concerned. Diverted hence, however, the American orders, if such be still forthcoming, may meet with ready acceptance at the hands of the German manufacturers, who are hungrily hunting after orders just now, and who are prepared to book specifications at almost any price.

THE CHANGES IN PRICES,

or the principal ones, at all events, made known since I last "stained paper" on your behalf, have included the issues of new lists by numerous iron houses. Earl Dudley's new list quotes: Bars, lowest quality, £8. 12/6; single best, £10; double best, £11. 10/; treble best, £13. 10/; angle iron, strips and hoops varying from 14 to 19 w. g., are respectively £9. 2/6, £10. 10/, £12 and £14. T iron, not exceeding eight united inches of the quantities mentioned, are respectively £9. 2/6, £10. 10/, £12 and £14. William Barrows & Sons, of Tipton, have advanced their last rivet iron to £10, and best best ditto, £11, best charcoal plates, £20. 5/, and best charcoal sheets, £10. 5/; hoops, £9; B B H Crown, £8; B B H best, £9. 10/, and best best, £10. 10/; B B H plates are £10; best boiler ditto, £11; double best, £12, and treble best, £13. Sheets of the same firm to w. g. are £10. John Bagnall & Sons (Limited) make bars £8, hoops, £8. 10/, sheets and boiler plates, £9. 10/. The Pelsall Coal and Iron Company (Limited) quote bars and hoops, £7. 10/ and crown sheets, £8. 15/. E. T. Wright & Sons, Momnoor Iron Works, Wolverhampton, have advanced best plates to £9. 10/; sheets to £9; crown bars, £7. 15/, and hoops to £8. 5/. The New British Iron Company, Congreaves Iron Works, quote "Zion" bars £8, and other kinds in proportion. The new minimum prices of Millington & Co., of Tipton, are now: Bars, £8; small rounds and square of ⅜ in. are £8. 10/; ditto 5-16 in. 1 and 2, £9, and so on. Best bars they quote £9; double best, £10, and treble best, £12. Plating bars range from £8. 10/ @ £9. 10/. Best chain iron is £9, and for best sorts, £10. 15/. Plates of 4 cwt. each are £9. 10/; best boiler plates, £10, and double and treble best, £11 and £13 respectively. Sheets range from £10 @ £11. Horse shoes of general machine, &c., make are 5 % dearer, and range as under: Fullered fore, 16/6 @ 17/; fullered hind, 17/6 @ 18/6; stamped fore and hind, 16/6 @ 17/6; hunters' forged concave fore, 22/ @ 23/; hind, 22/ @ 23/; patent fullered fore, 15/ @ 16/; patent concave fore, 20/ @ 21/; Rodney's patent double-fullered fore, 17/ @ 18/; best hand-made Australian hack, 16/ @ 17/; ditto cocked, 16/ @ 17/; best hand-made Cape horse shoes, 17/6 @ 18/6.

ARMOR PLATES

are beginning to be spoken of again, now that the engagement between the Chilean and Peruvian vessels would seem to have demonstrated the superiority of the plates over the rams. Most of the European governments have long been awaiting the outcome of some really decisive naval engagement before proceeding with the construction of additional ironclad monsters, under the impression that such an encounter, if fairly made and met, would do much to settle the vexed question of guns *versus* armor. The British government appears to have decided in favor of steel and iron combined plates—steel for the front and iron for the backing. Both John Brown & Co. and Charles Cammell & Co. have long been experimenting in this direction—two or three years, at least—and both are now meeting with encouragement. The steel is really cast or poured upon the hot iron plate, with which it welds, and while hot is rolled and compressed, which completes the amalgamation. The steel is confined upon the surface of the iron at the outset by a sort of movable iron frame, which is dispensed with, of course, when the mass assumes the consistency of low temperatures.

THE ROYAL VISIT

to Sheffield, a few weeks ago, filled the local newspapers with a great deal of sense and nonsense, but I don't remember observing any account of a little incident for the truth of which several respectable private correspondents vouch. When Prince Leopold went through the electro-plate manufactory of James Dixon & Sons, the firm desired to present His Royal Highness with a dram-flask, or "pocket pistol." This they scarcely liked to hand to their eminent visitor just as it was. It was, therefore, decided to present it on a handsome silver salver, the programme being so drawn up that the flask was to go to the Prince, but the salver wasn't. When the auspicious moment arrived the young Prince evidently thought that the salver was included in the gift, for he smilingly accepted both, handed them to his equerry, and was utterly unconscious of his error. The joke was a good one, but I believe that salver was worth a goodly number of English pounds sterling. The Prince is in ignorance of his lache to this day. Of this anecdote we may aptly say *ben trovato*.

SHEFFIELD REPORTS,

public and private, of the past week, seem to be united in recording a continuance of the improvement which has lately made itself felt thereabouts in common with most of the other hardware districts. As I have had occasion to remark on previous occasions, the alteration has so far cheifly affected the heavier industries, but I learn that in many of the lighter branches of the local trades there is beginning to be more work done. There is no decided activity anywhere, and in many instances there is not even an average season turnover; still the tone of business is better, people are more hopeful, and there seems to be a disposition to pull ahead with vigor and enterprise. When I say "enterprise," I must be understood to mean only a certain number of Sheffield manufacturers. The remainder are very far from being enterprising, or public-spirited, and appear to be utterly devoid of that push and go of which some of their townsmen are so proud. Sheffield has suffered much of late from this sad absence of "G," and will do so still more in the immediate future, unless her manufacturers and merchants "wake up" and *do*, instead of talking, to which some of those gentlemen are apparently much addicted.

BIRMINGHAM,

on the other hand, is a "village" which possesses a great deal of "go" and energy. The merchants and factors there do a large amount of business for the Sheffield manufacturers, who areapparently content to allow the middlemen to reap most of the profits and rule the roost precisely as they please. The Birmingham merchants, on the other hand, go very far afield, and extend their bounds into most parts of the earth. They have not been, perhaps, of most service in some senses to the interest of the British manufacturers, but in other respects they have done good work, and have sustained the brunt of many a hard struggle abroad, financial and otherwise. The trade is now, however, slowly but surely slipping out of their control, the manufacturers having at length begun to awake to the conviction that if they wish to retain and extend their own business connections they must do it themselves, and not leave the matter in the hands of a third and intermediate party, who cares nothing for quality or pattern, but simply looks after his own profits. At the present time the principal Birmingham industries are fairly, but not by any means fully, engaged.

THE RAIL MILLS

in all parts of the country are not less busy than when I last had occasion to allude to them. If I am correctly informed, orders for nearly 70,000 tons of steel and for nearly 20,000 tons of iron rails have been given out within the last four weeks, at prices ranging from £5 to £6. 15/. All the makers are very firm, and not more than about three can take orders for delivery this side of March 1st, 1880. At Barrow the whole of the 12 blast furnaces are going, and I dare say Mr. Smith is now finding uses for his immense stock of ends and other scrap. Bolckow's are well engaged, and are pushing forward their new converters for dealing exclusively with Cleveland pig iron. These converters will have much wider necks than ordinary, to prevent mechanical choking by slag and scoriæ. All the mills at and near Sheffield, with one exception, are busy, and in Scotland, Wales and Monmouthshire the converters and mills are well employed. At Cyfarthfa 500 tons of iron rails were rolled last week, and the famous old works are said to be engaged for a long time ahead—possibly until next midsummer. Steel rails are quoted £6 @ £8. 5/ f. o. b.; double headed of 56 to 80 lbs. per yard, £6 @ £6. 2/6; and lighter sections, 5/ more money per ton. Street rails for tramway uses, which are in demand, sell at the highest figures mentioned here.

OLD RAILS AND SCRAP

are easier, in sympathy with the cabled tone of your market. Old iron rails are held quiet at 88/ @ 92/6 per ton c. i. f. American ports for early to spring shipments. Old wrought scrap is 90/ @ 95/, on same conditions, and cast scrap 75/ @ 80/. Many sorts of useful old materials have become very scarce here.

THE METAL MARKETS

have been rather quieter during the week, although the change has not been very pronounced as regards prices, and in the face of the firmness reported from most of the Continental markets, no immediate depreciation in values of any moment is apprehended. The rise in tin and lead is a splendid thing for the Cornish, Derbyshire, Cumberland, Welsh and other mine owners, whose properties have suddenly attained a market value, and the produce of which can now be sold at prices which render mining worth attending to. Latest official quotations on the London metal exchange are as under: *Copper.*—Steady at £64. 10/ for g. o. b. Chili bars on the spot, and £65. 10/ @ £65. 15/ forward; Wallaroo, £73 @ £73; Burra, £71 @ £72; tough, £69 @ £70; selected, £71 @ £72; strong sheets, £75 @ £77. *Tin.*—Firmer; £91 @ £92 for fine foreign; English ingots, £94 @ £95. *Iron.*—Scotch pigs, 55/3 @ 56/. *Lead.*—English pig, £17 @ £17. 5/; soft Spanish without silver, £17 @ £16. 17/6. *Spelter.*—Good ordinary brands, £19. 10/ @ £19. 15/. The price of V. M. advanced 20/. *Quicksilver*—£7. *Antimony.*—£64 @ £65.

FOREIGN.

FRANCE.

(*Moniteur des Interets Materiels.*)

PARIS, NOV. 16, 1879.—*Metals.*—The weather has become milder again, and the fall season has thus been prolonged, keeping business brisker than it otherwise would have been. *Copper.*—This metal has been quiet and weak, with a decline all round of 2.50 francs the 100 kilos. We quote Chili Bars 170 @ 175; Ingots and Slabs 177.50; Best Selected, 180, and Corocoro Ore, 175 francs. Marseilles has remained steady at the ensuing rates: Small Refined Ingots, 175; Sheet Copper, 187; Bolts, 197; Sheathing, 190; and Yellow Metal do., 190 francs. *Tin.*—A quiet trade has been transacted. We note a decline of between 2.50 and 10 francs. The following are the quotations: Australian, 247.50; all other sorts, 242.50. At Marseilles speculators have been selling out, leading to a general decline of 5 francs. They quote Banca 240; Straits, 230 @ 235, and all other sorts 245. *Lead* has declined 5.¢ to 1 franc.

We quote here the various sorts 43.50 @ 44. Lead is inactive at Marseilles, where a similar giving way has occurred. They quote Pig Lead 38 @ 41, and Manufactures 45 @ 46. *Spelter* has been weakening, and on Spelter deliverable at Havre a concession of 5¢ has had to be made. The quotation here is 50.50 @ 51 francs, and Sheet Zinc 65. Marseilles is firm and tending upward. They quote Sheet Zinc 63 francs for Vielle Montagne, and 61 for other brands; old Remelted, 28 francs. *Iron*,—The improved feeling in this branch is fully maintained. The Northern forges have agreed to raise prices again 5 francs per ton. This advances the price of Merchant Iron to 165 francs: at Paris the quotation is now 175. Sheet Iron advances even more rapidly; Common Sheet Iron No. 2 now commands at Paris 220, and No. 3 2.50 francs. Cast Steel for tools is worth 135. In the Ardennes it is reported that the owners of forges will form a combination to put up prices. The foundries and rolling mills there receive plenty of orders; the manufacturers of heavy hardware are likewise doing well in the district. In the Haute-Marne the business movement is general and of the most satisfactory kind, despite the poor crops. There is no change in prices. Iron industry in the district is looking up more and more, and promises well for 1880. Most of the leading articles manufactured there are in good request, and in quantities to which the people there were not accustomed any more; among other articles there is a brisk demand for chains and iron bedsteads. Common nails continue to be neglected. The manufacturers of horse shoes at the North decline to go on selling ahead at current rates. The fact is that since our last report the comparatively low price of this article has attracted purchases on the spot, and the stocks are now sufficiently reduced to put a different face upon the situation of these goods. Thus far the Denain & Nuzin Co. was the only concern in the locality making Steel Rails, but we have now ascertained that next year the Providence Co. will make them too. In the Sambre basin things are improving also, prices are rising, stimulated by more liberal commands arriving. At this time of the year a revival in that locality seldom takes place, and the one now occurring augurs well for the future. There is a slight disappointment in the Rhone and Loire district, certain big orders expected not having made their appearance, but they are, nevertheless, of good cheer. *Coal* was getting to be quite active, but has been checked in its improving tendency by the return of milder weather. Prices have remained firm and unaltered nevertheless, both as regards coal for industrial and domestic purposes. The All Saints' Day holidays have interfered a little with activity at St. Etienne.

BELGIUM

(Revue Universelle.)

BRUSSELS, NOV. 16, 1879.—*Iron.*—The aspect of the market is a reassuring one; prices obtained leave a living profit to makers, and it is to be hoped that the animation inaugurated may be kept up. But on this subject but few doubts are entertained. It should be noted, however, that at late adjudications prices have shown some slight signs of weakness. Our exchange has, however, been well attended, and there has been noticeable a good deal of firmness. The State will be in need of some railroad material in the course of this month, and prices will be watched with considerable interest. At Liege, Iron No. 1 for export is quoted 13.50 @ 14 at the works. The demand in Belgium, for the time being principally, runs upon Steel Rails and Sheet Iron. Toward the close of the year we presume there will be the usual lull inseparable from the holidays and other interruptions such as the taking of stock, &c., and as the activity in the markets will then have lasted among us some three months, there may well be a short interval of quiet preparatory to a general resumption, we hope, in January. Meanwhile we trust our foreign trade will become more and more important, the more so as Belgian makers have been slow in advancing prices on foreign orders, and in this they have acted judiciously. *Coal.*—This fuel has been tardy in following the upward tendency started abroad, but it is now 1 franc per ton higher. Stocks disappear fast, and the only complaint we have heard uttered of late was the insufficiency of railroad cars to take off the amounts ordered quickly enough to make room for a fresh output at the mines.

GERMANY.

(Borsenhalle.)

HAMBURG, NOV. 15, 1879.—*Metals.*—In the Iron trade this has again been a lively week in Germany, but prices have not risen any further. They have now reached, more or less, the level they held at the time the City of Glasgow Bank failed in the fall of 1878. Our rolling mills have a sufficiency of orders on hand to last them till February next. The demand for Common Pig Iron for foundry purposes continues unabated. The Aplerbeck Company have blown in one of their blast furnaces that had been standing idle some time, and the Horder Union we hear will do the same with two of theirs. They will then have in full blast six out of eight they possess. They have successfully introduced the dephosphorization process at one of their works and at the Rhenish Steel Works at Ruhrort, and we hear that their balance sheet for 1879-80 will give favorable proof of it. The Dortmund Union may say as much. But even as matters stand, on taking a general view of the Iron industry in Germany, prices are by no means what would be called remunerative, but the prospects for next spring are flattering, inasmuch as then many wants will be felt by the consuming public which the fall and winter season do not bring along. We say this with special reference to building and bridges. *Copper.*—There has been more speculative inquiry, but little natural business, and prices are unchanged. *Tin.*—The markets have been inactive and prices have remained unaltered, between 97 and 100 marks the 50 kilos. for all sorts. *Lead* has been, on the whole, firm, and a moderate amount of activity has prevailed, without change in prices. *Spelter.*—Our market has been well supported at 19 @ 19.50 marks the 50 kilos., with a rising tendency.

AUSTRIA.

(Austrian Trade Journal.)

VIENNA, NOV. 15, 1879.—*Metals.*—The Pig Iron market has remained uninfluenced by what is going on in neighboring countries, a circumstance in a great measure due to the proximity of the winter season. Business has, indeed, become duller every week, nor do we expect much of a revival till after the Christmas and New Year's holidays. The demand which has manifested itself in Austria thus far since the recent revival in the world's Iron markets has been for Old Rails, for Pig Iron and some few specialties. There has been little change in metals during the week. Business has been flat and prices have been irregular in view of the continual fluctuations in Western Europe, and especially in London, which seem to be mainly the work of speculators, and less so the influence of legitimate demand, hence viewed with distrust in Eastern Europe. We quote at the close the various metals as follows: *Copper* in Ingots and Rosettes, 74 @ 80; Old Compact, 66 @ 70; *Tin* of all sorts 120 florins the 100 kilos; Prime *Antimony*, 76; Hard *Lead*, 19; Soft, 20 @ 21; Shot, 27 @ 29; *Spelter*, 22 @ 24; ditto Sheet Zinc No. 8, 26 @ 29; *Gun Metal*, 85; *Brass*, 52 to 56; Nickel, 97 per cent., 6 florins per kilo.; *Bismuth*, 12 florins per kilo; *Minium*, 28.50; second quality, 27.50. *Vieille Montagne* Zinc White Green Seal 45 florins; Red ditto, 38; and Blue, 36.50.

EAST INDIES.

(J. Peet & Co.)

BATAVIA, Java, Oct. 11, 1879.—*Coal* has kept very high, and spot Australian Coal would still bring over 30 guilders per ton, but neither English nor Australian has been dealt in during the month. The demand must now soon decline, as the sugar season will soon be over. Of *Petroleum* there have been some nine arrivals, two of which have changed hands at 4.75 guilders, and are at 4.90, all cash, alongside. The Olbers and F. Stay have heavy average. The market is just now quiet, but firm, with no cargoes offering. *Freights.*—The market continues quiet, but pretty firm at about £2 per ton to the United Kingdom, and the same to the United States. So far from any improvement in rates being likely to take place, we shall probably see a decline as the year goes on. *Exchange* has gone considerably against sellers. We quote six months credit bills on London 11.92½ guilders per £ sterling.

HOLLAND.

(Koch & Vlierboom.)

ROTTERDAM, NOV. 11, 1879.—*Tin.*—Banca since our last report declined from 57 guilders the 50 kilos. to 53.50, and subsequently recovered to 55; Billiton has passed through the same phases and prices, and also closes at 55. The Netherland Trading Company will sell, on the 27th instant, 23,500 slabs Banca Tin at public auction. It will be of interest to note the course of Banca prices during the 8 years beginning with 1872, and we subjoin the same in guilders, the 50 kilos., accordingly:

Price of Banca Tin in Holland.

	1872	1873	1874	1875	1876	1877	1878	1879
Jan. 1	87½	85½	70	57¼	50	45	40¾	38½
Feb. 1	86	87½	70	56¾	50½	43½	40	36¾
Mar. 1	85	84	62	54	50¾	43¾	40½	40
April 1	93	87	53	51½	50	42¾	40	43
May 1	96	84	57	50¾	49	42½	39½	40¾
June 1	95½	80	58½	50	45½	42½	39½	39½
July 1	94½	83½	60	50¾	46¾	42½	39¼	39
Aug. 1	96	79¾	56½	48¾	44	41¾	39½	38½
Sept. 1	93¾	79	57	51	43	40½	37¾	41¾
Oct. 1	94½	74½	56½	52¼	42½	40¾	35¾	45
Nov. 1	92	72½	58	52¾	44½	43	37¼	57
Dec. 1	87	67½	58½	51	44¾	41½	39	

The Cheat River (Pa.) Mineral Region.

A correspondent of the Pittsburgh *Commercial* describes the mineral region of the Cheat River, from which we condense the following:

The Cheat has its source in Greenbriar Mountain, in the northern part of Pocahontas County, W. Va., whence it flows almost directly northward, through Randolph, Preston and Monongahela counties, to the Pennsylvania line. The river runs about three miles in Pennsylvania before it unites with the Monongahela, which it does near the Oliphant Furnace. It is a beautiful stream, fully as large as the Youghiogheny, larger than the Kiskiminetas, and about such a river as the Schuylkill. Its channel and beaches are smooth and pebbly, the water beautifully clear, and, coming as it does from a mountainous region, it always has a copious flow. Its entire course is through a region rich in minerals and interspersed with fertile valleys.

From the base of the Laurel Hill, where the Connellsville coal lies, the geological strata rise much more rapidly than does the surface of the ground. Hence that coal vein crops out at the base instead of running under the mountain. Then come successively mines of iron ore in the following order, all of which are geologically below the level of that coal vein, and appearing one after another as the greater geological curvature of the strata throws them up to the surface:

1. An iron ore vein, and the first below the coal, called the Little Honeycomb, but popularly known as the "Martin ore." This extends all over the country, but crops out below the summit of the mountain. Its average thickness is said by miners to be about 20 inches.

2. Hematite. This is topographically about 40 feet higher than the Martin, although geologically that much lower. It is a good vein and runs higher up the mountain than the "Martin." It is called the "Big Honeycomb."

3. There is another vein some 40 or 50 feet higher on the mountains than the Hematite, known locally as "Stradford ore." It is in a solid vein of 7 inches, with as many detached balls scattered among the overlying soft slate as will make it equal to any of the veins.

4. A vein of limestone ore, which is about 25 feet higher—geologically lower—than the Stradford. It varies in thickness from 15 to 30 inches. The furnaces in the vicinity used it largely while they were in operation.

5. The "Haines ore" comes next, being about 40 feet above the limestone ore. This vein varies from 15 to 36 inches. It extends over a large tract of country, but crops out before the summit of the mountain is reached.

6. The Snakedale vein—say 100 feet below the great coal vein.

7. The Hastings vein. This is about 10 or 12 inches in thickness, and has the reputation of being a splendid ore.

The three last-mentioned veins are not in the same order geologically as the four first mentioned.

A deposit of limestone is found in this region of not less than 75 feet in thickness. Its geological position is about 100 feet below the Martin ore vein. It crops out on the bank of the Cheat a short distance above Ice's Ferry, and again near the summit of the mountain. It is of first-rate quality, and makes white lime.

In the same region there is abundance of the same kind of fire clay of which the Bolivar and Mount Savage bricks are manufactured, and of a quality equal to either. Some years ago there was an establishment for the manufacture of fire-brick, at which brick of excellent quality were made, but which, for want of means of transportation, is no longer in operation.

The time was when our whole country was nearly on a level with regard to facilities for transportation. At that day iron could be and was manufactured profitably in that part of the valley of the Cheat which we visited. There are several abandoned furnace stacks—some very old and in ruins, others in pretty good condition. Away up on the side of the Laurel Hill, on a pretty little stream called Quarry Run, are the ruins of what was once called Pleasant Furnace. It was built some 75 or 80 years ago, and was blown by the Laurel Run. But so feeble was the blast that in pieces of cinder which we picked up were bits of charcoal not consumed. At an early day charcoal was exclusively used in the manufacture of iron, and thus the mountains were nearly denuded where so many iron mines crop out. But now a new and beautiful crop of timber has sprung up, so that a finer place to cut and gather telegraph poles and railroad ties does not exist. Some of the later furnaces used coke. At one of these, before finally closing up, the manager found that his stock of coke ran out before his stock of ore. He then resorted to a neighboring coal vein, three or four feet thick, and ran off about 200 tons of metal with that raw coal as fuel. Finally he managed to get his pig iron to market *via* the Monongahela, when that which was made with the raw coal was pronounced charcoal iron by manufacturers in Pittsburgh, and actually sold for $4 per ton above coke iron. As there is any quantity of the same coal there yet, this may be a fact of no little importance.

The great Connellsville vein extends to and across the Cheat, and also to the west side of the Monongahela. A mile or so below Ice's Ferry, which is about ten miles above the mouth of the Cheat, it crops out; but there are numerous veins of coal geologically lower, although topographically higher, one of which is mentioned above in connection with the iron manufacture. That great vein is also found, it is said, at the opposite base of the mountain. On the west side of the Monongahela it is not over 20 feet above the level of the bottom land; but in the hill above it there is said to be two other great veins, one of which is half way up the hill, and is nine or ten feet thick, and another near the top of the hill reported to be 11 feet in thickness. These two upper veins are of cubical fracture, and therefore well adapted to the trade in raw coal.

Some few years ago, when the oil fever was prevalent, a gentleman drilled a hole down about 400 feet, not far from Ice's Ferry, in the hope of finding oil. He kept a careful record of the strata through which he drilled. At the depth of about 100 feet he struck a vein of coal which he reports to have been 33 feet thick. This, if true, is a vast reserve which can be reached by shafting on the margin of what, at a small expense, can be made navigable water.

The Monongahela Slackwater Navigation Company have already extended their works to New Geneva. One more dam will slack the water to within two miles of the mouth of the Cheat. This the company is prepared to build as soon as Congress appropriates as much as will build another at the last mentioned point. That done, the navigation of the Monongahela will be complete to Morgantown; for a dam and lock 14 miles below that town gives navigation up there already. The dam below the Cheat will back the water several miles up that river, and thus open up both rivers to the inexhaustible stores of mineral wealth there deposited and at present practically inaccessible. There would be six locks in the 90 miles between Pittsburgh and the Cheat. The tolls for that distance would be as follows: On pig iron, 54 cents per ton; on iron ore, 25 cents per ton; on limestone, 18 cents per perch. A tug will bring down to this city 2000 tons, at a cost of $15 per day running expenses. Were that comparatively small work accomplished, iron ore of excellent quality can be laid upon our wharves at a cost greatly below what is now paid, not to speak of many other things which can be procured up there

Production of Quicksilver in the United States.

Although the latest of the countries which has entered the ranks of the producers of quicksilver, California now occupies by far the most important position among them, so that a historical sketch of the development of the industry in this country, which has closely affected the growth of silver and gold mining, is full of interest. We take the following from an article written by a San Francisco correspondent of the Boston *Commercial Bulletin*:

In Santa Clara County, California, near the head of the fertile San José Valley, and about 65 miles south of San Francisco, lies the quicksilver mines of New Almaden. These mines were long known and worked in a rude way by the native Indians, who prized the ore for its red color, and who used it for "war paint" and other decorative purposes.

In 1824 a French gentleman residing in the vicinity, supposing that the mines contained gold or silver, conceived the idea of working them. His plans, however, came to naught, and the project was abandoned. It was not until 1845, however, that the whites became aware of their true nature. It is related that in that year a Mexican officer discovered the character of the mines and endeavored to form a company to work them. Several years, however, passed without any decided measures to that effect being taken, and it was not until 1850 that the desired object was attained. At the time of their discovery it was found that the Indians had tunneled into the mine to the depth of about 60 feet. In the year above mentioned the new proprietors began their excavations; they found the ore to be fine grained, opaque, in color varying from cochineal to ruby red, and occurring in amorphous masses in pockets and irregular veins, generally incased in hard rock or slate formations. For many months after the mine was opened the proprietors labored under great disadvantages resulting from their ignorance of the proper methods to be employed in its operation. The management shared the easy-going character of the Mexicans, and were content to adopt a system in accordance with the desultory style of gold mining in that region.

A visitor to the mines at that period described the underground workings as having the appearance of a gigantic rabbit warren, so devoid were they of any approach to system or order. Gradually, however, an improvement in this state of affairs was affected.

In 1853, eight years after their discovery, the yield of these mines was 18,800 flasks; in 1854 it was 20,963 flasks, and in 1855, 28,917 flasks. Last year, as shown above, the yield of this State was 69,102 flasks, showing a gain in 25 years of 50,392 flasks, an average of over 2000 flasks yearly.

In 1858 a long suit, involving the proprietorship of these mines, was begun. It seems that at the time California was ceded to the United States, the Federal government agreed to protect the titles of property held by Mexicans within the boundaries of that State. Under this agreement a suit was brought by certain parties, who claimed an informality in the title given by the Mexican government to the original operators of the mine which rendered said title invalid. The case was brought before the United States District Court at San Francisco, where it excited much interest, among the legal talent employed being no less personages than Reverdy Johnson and Judah P. Benjamin. After various appeals, the case was finally brought to a close in 1864 by a decision in favor of the claimants, allowing them a large tract of land inclusive of the mines. Between 1858 and 1861 the mines were closed by government injunction. After the settlement of the dispute, the Quicksilver Mining Company assumed control of the property and operations were resumed. Under the new *régime* the business was greatly systematized and the general condition of the works much improved. The immediate effect of the new order of things may be seen by the following: For ten months, from September, 1863, to July, 1864, the average production of the mines was but 2774 flasks; in the latter month the new management took possession, and for the six months following the average production was 4118 flasks, an increase of nearly double. Our exports increased from 26,014 flasks in 1863 to 36,927 flasks in 1864 and 42,469 flasks in 1865.

Since the opening of the New Almaden Mine, a number of cinnabar mines have been discovered in various parts of Santa Clara, Lake and Fresno Counties, the Redington and New Idria mines among others of less note, but their yield has been small compared with that of the New Almaden. In 1868 quicksilver mining was not regarded as a very profitable occupation. At that time a large quantity had accumulated in the markets of the world, and the demand for the article had visibly decreased. This state of things had a particularly depressing effect on the prospect of the New Almaden Mine, and all sort of dismal prophecies were made concerning its future. So apprehensive were the mining companies of California that they formed a combination, and agreed to limit production. In 1870 the yield was but 29,546 flasks, a falling off of 19,154 flasks in two years. At the same time a strong advance had taken place in the article. The year 1873 was marked by a great number of discoveries of cinnabar mines, though the product of the State had decreased to 28,600 flasks, and the price had been steadily tending upward. Since 1873, however, a healthier tone has prevailed in the market, and, as shown above, the product in 1876 amounted to some 40,000 flasks, and since that time to a still larger figure.

Steel Faced Armor Plates.

The Sheffield *Telegraph*, of recent date, gives the following description of the method employed by Messrs. John Brown & Co. (Limited) in the manufacture of steel-faced armor plate, as invented by Mr. J. D. Ellis, chairman of the company:

An iron plate of a similar quality to that usually used for an armor plate is made in the ordinary manner. On this plate is fixed a frame made of iron bars, capable of holding a quantity of steel equal to about half the thickness of the iron plate. The iron plate, with this frame, is placed in the armor-plate heating furnace until it has arrived at weiding heat. It is then withdrawn from the furnace, and a quantity of steel previously prepared by the Bessemer process is run on to the iron plate, filling up the frame completely. The plate is allowed to cool, and is then reheated and rolled in the usual manner. It will be seen from this description that the process of manufacturing these steel plates—or, to speak more correctly, compound plates, iron with steel face—is different from that employed in the rolling of an iron plate.

Under the old system, the mass of iron was "baked" in the furnace the required time, and then pulled out, placed on a trolley, and drawn and redrawn through the rolls while it was hot till it had assumed the requisite thickness. Under the new system, the process is peculiarly picturesque, being a combination of the Bessemer and the old style of iron-plate rolling. The iron plate, with framework, emerges from the mouth of the furnace, and is drawn underneath an iron plate. On this the workmen can stand and superintend the admission of the steel. At a given signal the ladle, containing some ten tons of steel, is carried along by a splendid crane, until it is suspended over the plate, which is screwed down on the frame. Then the plug is taken out, and the molten steel pours through the cavity into the frame, which is now a box. Occasionally the stream of metal has to be interrupted to prevent it settling down and to secure an equal diffusion all over the interior of the frame. Now and again the metal bursts forth at the side and falls in a shower of star-shaped sparks, giving one an idea of the Bessemer process in miniature. There is more metal in the ladle than is needed, and the surplus is run into molds to form ingots for forging and other purposes. One plate made was 13 feet 6 inches long by 5 feet 6 inches wide and 16½ inches thick. It would weigh 20 tons. That was in the rough. Finished, the plate will be 18 feet long by 4 feet 6 inches wide and 9 inches thick, the weight being reduced to 14 tons. The importance of the process, not only to the steel plate trade, but to the country, is easily explained. An iron plate 12 inches thick will be pierced by a steel shell with a charge of 50 pounds powder. Against a steel-faced armor plate a similar shell, similarly charged, will not make an indent of more than 3 or 4 inches. In other words, a 9-inch steel-faced plate is more than equal to 12 inches of iron, and gives equal strength with from one-third to one-fourth less weight. The parts which had been cut from the plates show a "weld" which could not be excelled.

Mr. Ellis has given his attention for years to the compound system of manufacturing armor-plates, and worked for some time on another "tack." Plates on this principle, we understand, have been ordered for H. M. S. Ajax. They will be very formidable plates. In the rough there will be about 16 inches of iron and 8 inches of steel, the finished thickness being 16 inches.

Is British Trade Reviving?—Perhaps the best answer to this question, so far as the "hard goods" of England are concerned, is found in a comparison of the exports to America during September of the last two years. America, it has been frequently said, is the keystone of England's business. The remark was made before the country had the good sense and commercial enterprise to look for other markets; but it still holds good to a very material degree. If business in the States is languid, the trade of Britain is far from brisk. Now that things are looking up across the water, there is a more healthy "all round" feeling here. American writers affect to look upon recent statements in regard to the export of iron to their markets as exaggerated, but the Board of Trade returns are conclusive on that point, as well as in regard to finished goods. In September, 1878, the total weight of pig iron, bars, rails—iron and steel—hoops, sheets and plates, tinned plates, cast iron, old iron and steel, amounted to 11,526 tons; in the corresponding month of 1879 the weight was 86,587 tons! This is an enormous increase, and, what is equally important, it continues, and exists along with decided signs of improvement in other quarters. Descending to details, it is plain that the most perceptible increase is in pig iron, old iron and rails. Pig iron has increased from 1500 to 32,000 tons, rails from 34 to 8431 tons, and old iron from 289 to 25,640 tons. Every item, however, is improved, so that trade may be definitely declared to have revived in a very material degree.—*Engineer.*

GLASS ITEMS.

It is understood that Pittsburgh parties have bought ground from Lowe & Spaulding at La Grange, O., and are endeavoring to form a company for the erection of glass works. It is stated that the project is meeting with much encouragement, and that the requisite funds have been nearly all secured.

The Croton Glass Works, at Newcastle, Pa., will be started about December 10 by a new company, under the title of the Croton Glass Works, Limited, John W. Knox, treasurer.

The Tibby Brothers, Pittsburgh, who have now two large bottle glass houses at Sharpsburg, are negotiating for another extensive one, for which some parts of the contract have been made. This firm have large orders to fill. They are now making a pattern which has not been in the market for nearly seven years.

The Central Glass Works, Wheeling, manufacturers of tableware and bar goods, employ 350 hands. Business is 25 per cent. better than last year. They are working full, and have orders ahead for some time.

North Wheeling Glass Works, Wheeling, manufacture flasks exclusively. They have been in operation for about one year, employ over 50 men and boys, have orders for several months ahead, and are receiving orders by mail daily.

Hobbs, Brockunier & Co., Wheeling, employ 350 men and boys. They manufacture tableware and bar goods and chandeliers. They are full of orders and are working to their full capacity. Their business is 25 to 30 per cent. better than last year.

The Excelsior Flint Glass Company, Pittsburgh, report a heavy trade in chimneys, but prices are still too low. Their factory is doing good work.

The McKeesport (Pa.) Glass Works have started up, after an idleness of six years. It is proposed to operate the works to their full capacity from this out.

The gas furnace owned by the DePauw Glass Works, at New Albany, Ind., which has not been in use for several months, has been put in order again.

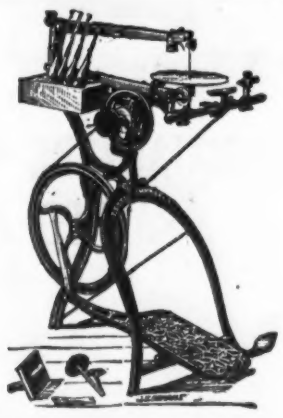
The advance in prices of table glassware has come at last, the leading Philadelphia houses having notified their customers of an increase in the list of prices of 20 per cent., while the Pittsburgh firms—Adams & Co., Bryce, Walker & Co., Doyle & Co. and George Duncan & Sons—announce an addition of 10 per cent.

Large Auger Holes.

We have heard of various kinds of big bores, but we think the following a little ahead of anything that has come within our knowledge:

The repairs being made at the Pettaconsett pumping station of the Providence (R. I.) Water Works necessitated the boring of holes 10 inches in diameter through a platform of hard pine timbers 4 feet thick, for pile-driving purposes. The kind of auger, and how to use it—that was the question; and it was one that the average auger manufacturer could not solve. City Engineer Gray undertook it, and with the assistance of the Providence Locomotive Works accomplished his object. The tool consists of a shaft or shank, the lower end of which is 1¼ inches in diameter, and has a thread cut in it. The upper part is some 2 inches in diameter. The whole is about 4 feet in length, and there is an extension shank to give more length as the shank disappears in the wood. Through the shank, just above where the thread commences, is a slot, into which is fastened the cutter or planer, or it may be called both. This extends out a sufficient distance from the shank to make a hole of the size required, and on the extreme end is a lance extending downward about one-sixth of an inch, while the remainder is more like the knife of a planer. As the shank turns, the lance cuts the fiber at the circumference of the whole, just its length in advance of the planer, while the knife, which, though moving with the lance, follows one turn behind in its work, lifts off the chips, which are 10 inches across and one-sixth of an inch thick. This auger is guided by a wrought-iron spider or frame fastened to the platform through which the shank works. Before boring the hole, a hole is bored with a common auger a little smaller than the thread on the lower part of the shank, in which this thread works, thus not only guiding and regulating the whole, but drawing the larger auger in just so much at every turn. With this auger 40 or more 10-inch holes were bored in that platform, and that by human power, and without material difficulty. It took only five men to work it, and with these the hole was bored through the 4 feet in two hours from the commencement. This includes the setting of the auger, &c., but the actual boring time, at least in some instances, was one hour and 20 minutes.





The demand for Scroll Saws has become so large that most Hardware dealers are getting in the way of keeping them.

The trade commences in early fall and lasts all winter, thus helping business in the dullest season. There is probably not a Hardware store in the land but that could sell some of these goods.

We are headquarters for hand and foot-power Saws, Saw Blades, Wood, Designs and all things pertaining to this business. The Lester Saw at $8 and Rogers Saw at $3 are now in universal demand. The Lester Saw consists of a Scroll Saw, Circular Saw, Drilling Attachment, Emery Wheel, Dust Blower, Turning Lathe and Tools, extra Saw Blades, Drill Points, Designs, Screw Driver, Wrench, &c. It has been greatly improved since last year, and is a very perfect machine. The Rogers Saw consists of a Scroll Saw, Drilling Attachment, Dust Blower, Designs, Drill Points, Saw Blades, Wrench, &c. The Saws are nicely boxed, without extra charge. We warrant them in all respects. They give dealers no trouble.

MILLERS FALLS CO.,

74 Chambers Street, NEW YORK.

Q. S. BACKUS,

Sole Manufacturer of the



BACKUS

Patent

Bit Braces,

Angular

Borers

Ratchet

and

Straight

Extensions.

&c.

Comprising every grade of quality and finish, from the cheapest Farmers' Brace to the finest Steel Sweep heavily nickel plated, with rose-wood handles and lignum vitæ heads, being the most complete line offered by any manufacturer in the country, and which for simplicity of construction and effectiveness have no equal. Catalogues and price lists furnished upon application at office and salesroom,

No. 102 Chambers Street, NEW YORK.

COVERT'S HORSE AND MULE JEWELRY.



Consisting of Covert's Celebrated Harness Snaps, Swivel Snaps, Open Eye Bit and Chain Snaps, Snap and Thimble for Horse and Cattle Ties, Rope Goods, consisting of Horse Ties, Cattle Ties and Halter Leads, Leather Horse Ties, Breast Chains, Halter Chains, Martingale Chains, Rein Chains, Post Chains, Post Rods, &c. These goods are far superior to anything of the kind on the market. They have from real merit become standard, and never fail to give entire satisfaction. They are sold by all leading jobbers in general and saddlery hardware at manufacturers' prices. Send for illustrated catalogue and price list. Address **COVERT MFG. CO.** Sole Manufacturers, *West Troy, N. Y.*

PECK & SNYDER'S
SELF-ADJUSTING AMERICAN CLUB SKATE



Has held its place in the market for the past five years as the "Boss Skate." It pays dealers to keep them, as they sell at sight, requiring no key or wrench, no nuts or screws to lock. Perfect in style, finish and workmanship. We mail a complete price list of Skates with trade discounts to dealers on application. Address, **Manufacturers and Jobbers of Skates and Straps.**

PECK & SNYDER, 124 and 126 Nassau Street, New York.

NATIONAL
Horse Nail Co.

MANUFACTURERS OF

FINISHED

[BRIGHT OR BLUED]



These nails are made of the best brands of **NORWAY IRON,** and are guaranteed to be equal to any in the market.

NATIONAL HORSE NAIL CO.,
VERGENNES, VT.

HORACE DURRIE & CO., Agents,
No. 97 Chambers St., New York

The Oldest Shot Tower in America.

FOUNDED JULY 4, 1808.



THOMAS W. SPARKS,

Manufacturer of

SPARKS'

American Chilled Shot,

Rivaling the English and all Others.

STANDARD DROP & BUCK SHOT AND BAR LEAD.

121 Walnut Street, Philadelphia.

Grant Fan Mill & Cradle Co.

Manufacturers of

Grant's Grain, Coffee, Rice, Cochineal and Pimento Fans,

and



TURKEY WING GRAIN CRADLES, 4, 5 and 6 fingers.
GRAPE VINE GRAIN CRADLES, 4 fingers.
SOUTHERN PATTERN GRAIN CRADLES, 4, 5 and 6 fingers.
All of a superior quality. None genuine unless marked *Grant Fan Mill and Cradle Co.* Send for illustrated catalogue and price list.
P. O. Address,
MELROSE, Rensselaer Co., N. Y.

NORWEGIAN PLOW CO.,

DUBUQUE, IOWA.

W. C. CHAMBERLIN, President. GEO. STEPHENS, Sec'y and Treas.
C. W. MITCHELL, Vice President. H. H. SATER, Superintendent.

Manufacturers of the Celebrated

CAST STEEL DIAMOND-HARDENED

PLOWS.



OUR SPECIALTY.—Plows for difficult soils and of great durability. Also, Scrapers for railroad work. For durability and scouring qualities the best Plows produced in the country. Warranted to scour in any soil. Made with extra thick points and shins. Symmetrical and correct in model. Easy running and thoroughly pulverizing the soil.

Agents Wanted Everywhere.



sold by the hardware trad

"DRAW CUT"
BUTCHERS' MACHINES.
Choppers, Hand and Power
Stuffers,
Lard Presses,
Warranted thoroughly made and the BEST IN USE.
MURRAY IRON WORKS,
Burlington, Iowa.



R. C. PURVIS,

Manufacturer of

Octagon Tea Pots.

Rear of 407 Cherry St., Philadelphia, Pa.

Send for Price List.

Established in 1839. Formerly L. & A. G. Coes.

L. COES & CO.

Manufacturers of L. Coes'

GENUINE IMPROVED AND MECHANICS



Wide Bar Full Length. Wide Bar Full Length.

Patent Screw Wrenches

UNDER PATENTS DATED

JUNE 26, 1866,
MARCH 23, 1869,
REISSUED 1870.

NOVEMBER 10, 1863,
FEBRUARY 23, 1864,
REISSUED JUNE 1, 1869,
IMPROVED AUG. 1, 1877.

The back thrust when in use borne by the SHANK instead of the Handle.

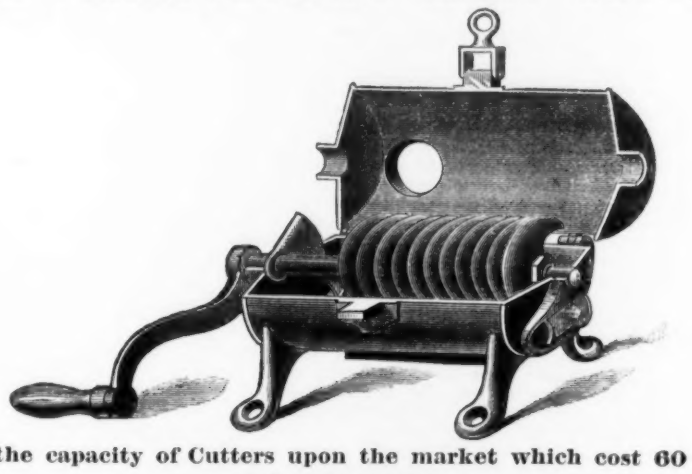
None genuine unless stamped "L. COES & CO."

WORCESTER, MASS.

Warehouse, 97 Chambers St., & 81 Reade St., N. Y.

HORACE DURRIE & CO., Sole Agents.

THE PENNSYLVANIA MEAT CUTTER



Has the capacity of Cutters upon the market which cost 60 per cent. more money.

PRICE LIST.

No. 1, containing 8 Steel Knives	per dozen,	$24.00
No. 2, " 11 "	"	28.00
No. 3, " 12 "	"	36.00

Nos. 1 and 2 are packed ½ dozen in a box; No. 3 packed ¼ dozen in box.
Discount to the trade 50 %. Orders solicited.

LLOYD, SUPPLEE & WALTON, Philadelphia.
HORACE DURRIE & CO., New York City.

PATENT **Elliptic Spring Whistles** FOR **SPEAKING TUBES.**

Patented April 29th, 1879.



We call the attention of the trade to the whistle for speaking tubes, represented in above cut, as being superior, in a mechanical point of view, on account of the

PATENT ELLIPTIC SPRING,

which is much less liable to break and get out of order than the spiral spring usually used. These whistles being made entirely of metal, are very strong and durable. They are offered in a variety of styles at very reasonable prices. Send for illustrated circular and quotations.

We also invite an examination of our **PATENT REVERSIBLE DOOR LOCKS,** which by their peculiar construction, combine **simplicity, strength and durability.** In these Locks the combination of the Patent Lever and Spring renders the latch movement very easy and prompt in action.

Illustrated catalogues and price lists furnished on application.

TRENTON LOCK AND HARDWARE CO.,

Manufacturers of **Superior Building Hardware.** Trenton, N. J.

AGENTS.

JAMES M. VANCE & Co., 211 Market St., Philadelphia, Pa. ; JAMES MARSHALL, 48 Warren St., New York.

STANDARD SASH LOCK.

No. 30, Real Bronze.

(Open.)



PAYSON MFG. CO.,

CHICAGO, ILL.



THE SWIFT MILL.

ESTABLISHED 1845.

The annexed cut shows one of the many styles of Coffee Mills of our manufacture, especially adapted to Grocers' use and all retailers of coffee. They are highly ornamental, and workmanship of the very best. We make more than 30 styles.

ALSO LANE'S PORTABLE COFFEE ROASTER

Will roast 30 to 40 lbs. at once, and can be used as a stove at other times. Send for descriptive list to Manufacturers.

LANE BROS., Millbrook, N. Y.

Also sold by leading wholesale houses.

Our agents, Graham & Haines, 113 Chambers St., New York, carry a full line of our goods, and will be pleased to serve you at factory prices.

American Hardware Exhibits at Sydney.

The Sydney *Morning Herald* of October 6 just received, contains the following:

Locks and door furniture may not be regarded by most persons who walk through an exhibition as very attactive exhibits, but it is quite likely that many who have paused for a minute or two in front of the Russell & Erwin Mfg. Co.'s stand, near the center of the American court, have admired the elegant patterns of their locks and door furniture, and the bright and cheery look of the objects represented in bronze, glass, nickel and gilded ware. There is much importance attaching to this exhibit, and those who look upon the present Exhibition as a theatre of instruction on a grand scale, will lose much if they failed to examine the goods under review; and our artizans especially, who best know how to appreciate technical skill, will, we imagine, have a very thorough respect for the artificers of New Britain, Conn., which is the seat of Russell & Erwin's manufacture. There is an enormous amount of building going on from year to year in the neighborhood of Sydney; and the quantity of builders' hardware imported must be a very considerable item in the invoices of our ironmongers. Hitherto England has had the market all to herself; but, if we correctly understand the representations of the gentleman who is acting here for the Russell & Erwin Mfg. Co., it is time English makers look to their laurels or they may discover that they have lost business as well as the prestige they have enjoyed.

A visitor who intelligently examines these goods cannot fail to be struck by the contrast which exists between them and similar articles of English make. The American goods are light and elegant as compared with the heavy and clumsy descriptions of locks in general use in the colony. We hazarded the theory that the demand has been for cheap goods, and that the trade has therefore imported inferior articles to meet the condition of price. This is a position, however, which our American friend won't admit, for he stoutly maintains that the manufactures of his country are the cheaper of the two, and appeals for confirmation of the fact to a quantity of rim locks, made on the English pattern by the company expressly for export into England and England's colonial markets. We cannot pretend to the special qualifications which are necessary to form a competent judgement, and we do not altogether relish the idea that John Bull is jogging along in the old ruts, with his eyes shut to the improvements which have been made across the Atlantic, but the evidence appears to tend in that direction.

One of the vulgar errors which Russell & Erwin's exhibit ought to remove is that bulk and weight constitute strength. It is no longer necessary that a man should carry a pound weight of iron in the shape of a door-key to lift the lock of his store door, when locks of the strongest description can be operated by the magical touch of a little steel key, which could almost be worn on the watch-chain. A long experience of latch and front door keys enables us to speak feelingly upon this part of the subject; and if there were not so many reforming associations already afoot, we should be inclined to start a latch-key reform club. The latch keys of the Russell & Erwin Company are not only exceedingly light and handy, but being made of steel, are very durable, and being stamped out by machinery, can be produced at little cost. The keyhole of the largest front door provided with one of these locks need not be wider than half a crown, so that gentlemen who have to stay out late at the lodges of the Good Templars, for example, may meet their household divinities with perfect confidence, for none but a steady hand could insert the key. But these keys are not only valuable as unimpeachable certificates of sobriety—not only useful as evidence of good morals—but they have a sort of police recommendation, inasmuch as it is almost impossible for "Toby Crackit," or members of the more artistic branch of the burglary profession, to introduce instruments of sufficient strength either to pick the lock or injure its mechanism.

One principal difference, we are told, between English and American locks is that the former are usually made of wrought iron, and the latter of cast iron, which being tougher enables the lockmaker to put the strength into that part of the lock where it is necessary to have it, while with wrought iron the maker is obliged to fashion the tumblers and plates of the same thickness throughout. Some of the Russell & Erwin locks are attached to frames representing doors, and their working is thus made more readily apparent. Our attention was first claimed for a latch-lock which is so constructed that it can be used upon a right-hand or left-hand door, the latch bolt being readily reversible without impairing either the strength or durability of the mechanism. Another noteworthy lock is that which is called the patent anti-friction latch. With ordinary locks the latch bolt impinges upon the striking plate, so that when a door is slammed—unfortunately more the rule than the exception—the mechanism of the lock is subjected to a sudden jar, and all its parts are strained and liable to be loosened. The lock in question, however, is provided with an anti-friction latch below the bolt, which receives the shock, and nothing can be smoother than the way in which the latch yields to the pressure. The striking plate acts directly, and without loss of power, to force back the bolt, which, in its motion, is entirely withdrawn from contact with the lock case, so that the slightest pressure upon the door causes it to latch surely, gently and noiselessly, and renders slamming alike difficult and unnecessary. Another very interesting lock is that by which a door can be locked by simply turning a knob on the the inside or the out, but cannot be opened except with the key. Although the lock is suited for use upon a large heavy door, the key is made of a thin flat piece of steel, which causes the latch to fly back immediately it is thrust into the key-hole, no turning movement being necessary.

The locks we have been examining are placed in a stand in front of the principal case; and we will now turn to the case itself. Our attention is first taken by the large number of padlocks of many patterns, and from the smallest sizes. We miss the large heavy locks we are accustomed to see, but are struck with the manner in which many of the padlocks shown are operated. The little steel key to which we have taken such a fancy is not inserted into the face of the padlock, but in the rim at the side of the bottom of the lock; and a great point aimed at has been to exclude the rain which falls into ordinary locks of this description, and rusts their working parts. There are commoner sorts of locks which have the key-hole on the face, and protected by a guard.

We then come to a large number of door polished knobs made of mineral composition, porcelain, silvered glass, brass, bronze, &c., the designs in some cases being very artistic, and in all pleasing. There are also several crank handles, specially made for narrow stile doors. One advantage claimed for these door knobs will be appreciated by housewives who have been plagued by the way in which the screws work out of the ordinary rim locks, and the knobs are always falling off the spindles. This defect is met and overcome in the locks before us by the use of the patent rim or rose, which fits tightly over the screw fastening the knob to the spindle, and so prevents it from working loose.

Notice ought also to be taken, among other things, of the wheels or sheaves for sliding doors. In most American houses doors which slide back upon these sheaves into their recesses are used; and a little reflection will show that that is an improvement upon the plan of folding doors more commonly adopted here, because where a door is folded back, it can hardly fail to be in the way.

We are mindful of the adage that "fools rush in where angels fear to tread;" and we will, therefore, incur the censure of our fair friends by presuming to dogmatize upon domestic arrangement. Still, we may invite the ladies to look at the fire-iron furniture while their husbands are examining the locks; and it would be interesting to know their opinion as to which is the better plan of disposing of these noisy necessaries—whether they should be arranged as here, in the form of an elegant fireside trophy, or be left to be kicked and rattled about in the fender. Summer weather is coming on, and so we do not expect that the subject will be taken up as a practical question; and yet we could almost guess what would be the verdict of men afflicted with nerves.

The iron bronze and gilded door trimmings in the center of the case are handsome, and will be admired as well for their variety, as for the exquisite finish of some of the castings.

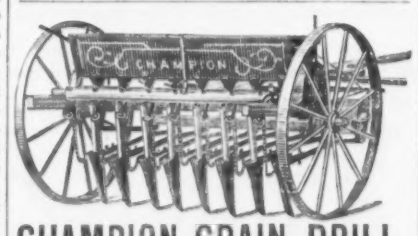
On another case we come to a more homely exhibit, namely, the Russell & Irwin sausage fillers, the revolving knives in which have the recommendation that they are self-sharpening. The machines are not only adapted for family use, but for the trade, and can be worked by hand or steam power. One of the hand-power machines, it is said, is capable of cutting up 500 pounds of meat per hour.

In another case we find a handsome assortment of carpenters' tools, made by the same firm, but known in the trade as Douglass mechanics' tools. They consist of chisels, gouges, drawing knives, augers, hollow ditto, bits, &c We are informed that these goods already find a large market in Australia, and have the highest reputation for excellence.

It may be interesting to note that the Russell & Erwin Manufacturing Company employ from 650 to 1000 men, women and children, according to the state of trade; and that in the five classes in which they exhibited at the late Paris Exhibition they obtained the highest awards, namely, two gold and three bronze medals.

French Railway Projects and the Iron Trade.—It seems from recent advices coming from France, that the proposed extension of the French railway system by the state, as advocated by M. de Treycinet, will be carried out. According to a recent report of the Minister of Public Works, it was decided in the last parliament to proceed with the construction of between 6800 and 7500 miles of new lines, which, roughly speaking, will thus be divided among the different systems: Nord, 493 miles; Est, 1580; Ouest, 1448; Orleans, 1454; Lyons, 1216, and Midi, 1378. Traffic between France and other countries is, or will be, abundantly served by 40 international lines, of which 29 are already at work, and 11 have to be made. When all these lines are finished, France will have communication with Belgium at 22 points; with Germany at seven; with Switzerland at six; with Italy at three, and with Spain at two. The effect of these large additions to the railway plant of the country upon the steel and iron industry of France will naturally be very stimulating.

Around the World in 115 Days.—A postal sent around the world from this city on August 4 was delivered to the sender by one of the city mail-carriers within the past week, after an absence of 115 days. It had gone via London, Marseilles, Cairo, Bombay, Singapore, Yokohama, and San Francisco. The card was covered with post-marks. A penny stamp in addition to the one on the card was all that was necessary for the journey.



CHAMPION GRAIN DRILL.

New model made expressly for the export trade. Received Medal at the Centennial Exposition. A machine of long established reputation for efficiency and durability. Circular mailed on application.

JOHNSON, GERE & TRUMAN, Owego, N. Y.

SIBLEY'S
IMPROVED LEVELING INSTRUMENT.



Mounted Complete. Price, $10.

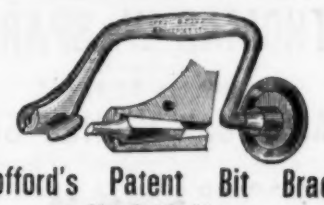
Trade supplied with one or two instruments at a fair discount. When ten or more instruments in all are ordered, a special discount will be given from the first. Catalogue containing full directions mailed on application.

BICKNELL & COMSTOCK, Proprietors,
27 Warren St., N. Y.



CLEM & MORSE,
Manufacturers and dealers in
Steam & Hand-Power
HOISTING MACHINES,
Dumb Waiters, Basement and Invalid Elevators,
No. 413 Cherry St.,
PHILADELPHIA, PA.
New York Office,
108 Liberty Street.

All kinds of Hoisting Machines repaired. Estimates furnished on application.



Spofford's Patent Bit Brace
Manufactured by
FRAY & PIGG,
Bridgeport, Connecticut, U. S. A.

All Iron, Four Sizes.		Rosewood Head and Handle	
No. 7	7-inch sweep.	No. 107	7-inch sweep.
No. 8	8 "	No. 108	8 "
No. 10	10 "	No. 110	10 "
No. 12	12 "	No. 112	12 "



No. 1

The Nutrizio
COFFEE POT

Unquestionably the BEST and CHEAPEST Coffee Pot in the Market. Patented September 3, 1878. Discount 50 per cent. Net Cash.

H. NUTRIZIO,
205 Quarry st., Philada.

John Carver,
MANUFACTURER OF
CAULKING IRONS,
Cotton, Freight and Hay Hooks,
No. 44 North Third Street,
Near First, BROOKLYN, E. D.

Special Notices.

LAMBERSON'S
HARDWARE PRICE BOOKS

A good price book is at all times indispensable in a hardware store, and just now, while prices are changing every day, it is an absolute necessity. My price books have come into general use and are endorsed by the best hardware men in the country. They are cheap at any price, considering the time and money expended on them, but in order to bring them within the reach of all, and particularly for the benefit of clerks and salesmen, I have concluded to REDUCE PRICES as follows:

Pocket Edition, full leather	$3.50,	formerly	$5.00
Large Edition, half leather	6.50	"	10.00
Large Edition, full leather	7.50	"	12.00
Discount Screw List	.50	"	.75
Leighs' Discount Book	.50	"	1.00

Please remit money with orders.

BUELL LAMBERSON,
No. 97 Chambers Street, New York City.

For sale at publisher's prices by Wm. Blair & Co., Chicago; A. F. Shapleigh & Co., St. Louis; C. B. James, Detroit; Edward Bultman, 1995 Vine st., Cincinnati.

LEIGH'S
Discount Book.

Specially arranged for the *Hardware* and other trades using *Combination Discounts*.

Mailed postpaid on receipt of price.

Bound in Leather, Silicate Leaves ..$1.00
" Cloth ..50

Address
EDWARD B. LEIGH,
St. Louis Elevator, St. Louis, Mo.

Or either of the Publishers, viz:
IVISON, BLAKEMAN, TAYLOR & CO., New York
R. & T. A. ENNIS, St. Louis.

TO MANUFACTURERS AND CAPITALISTS.

FLOWER PINS.

PATENT FOR SALE.

Address
J. H. PLUMMER,
1276 Pacific Street, Brooklyn, N. Y.

A. F. PIKE,
East Haverhill, NEW HAMPSHIRE
(ESTABLISHED 1823.)
HEADQUARTERS FOR SCYTHE, AXE, KNIFE, HACKER AND TOOL STONES.



Twenty Quarries and Four Factories in New Hampshire and Vermont.

Strong, Clear Grit Stone that will not glaze.

PRICES & QUALITY GUARANTEED

All Goods Genuine Brands.

My customers may rely upon being squarely dealt with and getting no poor, unsalable imitations.

LIST.

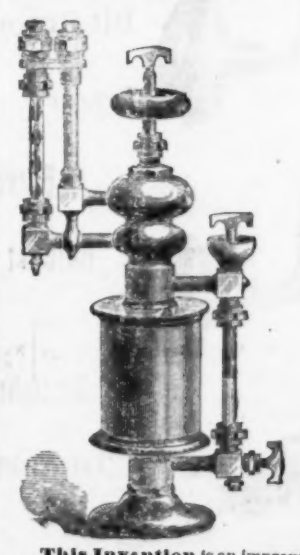
No. 1, Extra Indian Pond.
No. 1, " "
No. 2, " "
Premium.
Union.
White Mountain.
L'étoile.
Diamond Grit.
Hacker (Round).
Lamoille.
Willoughby Lake.
Green Mountain.
Black Diamond.
Ragg.
Mowing Machine.
Paper Mill Stone.
Vermont Darby.
" Chocolate.
" Axe Bitts.
N. H. Chocolate.
German Pattern.

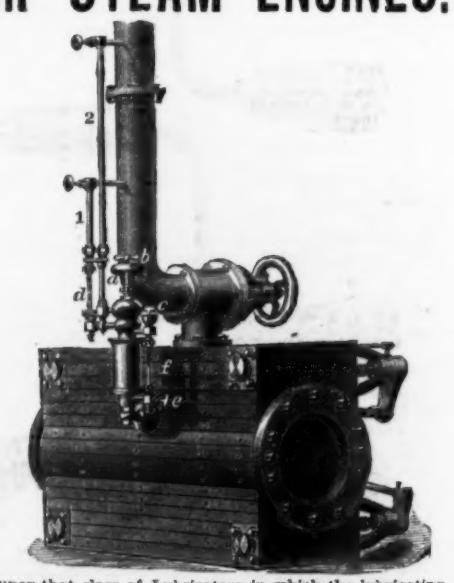
The only Manufacturer of Genuine, Old Reliable Indian Pond (Red End).

Stones manufactured, labeled and branded in any manner desired.

Beware of Coarse, Brittle Imitations.

HARPER'S
LUBRICATOR FOR STEAM ENGINES.





This Invention is an improvement upon that class of Lubricators in which the lubricating material is floated from the reservoir by the condensed steam passing into the reservoir, and may be applied to all kinds of Steam Engines, by introducing the Lubricant into the steam pipe so that it thoroughly lubricates and **prevents the wear** of cylinder, piston, valves and rods, thereby saving oil, coal and packing, and adding greatly to **the easy working of the Engine.** The ultimate saving in repairs to the engine is many times greater than the cost of Lubricator. The glass tube connected with the reservoir indicates the quantity of oil in the reservoir; the upper glass tube the quantity of oil escaping. The quantity of oil admitted to the engine can be regulated with certainty. We might claim great economy of oil; that we leave with the Engineer. This invention is in practical operation, and is very highly recommended by the best engineers, and all now using it. This invention is secured by Letters Patent of the United States, dated Sept. 26, 1871, and April 4, 1877. Information concerning the **Lubricator** may be obtained from our Agents, or by addressing

THE HARPER STEAM LUBRICATOR CO., Westville, Conn.



VERMONT SNATH CO.,
MANUFACTURERS OF THE
No. 00 and 000 Patent Swing Socket Snaths

and also a large variety of other styles of Snaths.

SPRINGFIELD, VERMONT.

THE
DEXTER
CARRIAGE SPRING

Combines Strenght, Durability, Beauty. | It is Graceful, Noiseless, Light and Easy.

The DEXTER SPRING is the most perfect Carriage Spring ever invented. Wherever it is known it is rapidly superseding all others for pleasure vehicles. It is especially recommended for use on the rough roads of new countries, as its peculiar construction relieves the strain on the vehicle and shock to the passenger, while the high grade of material used reduces the probability of breakage to a minimum.

For circulars, prices, &c., address

DEXTER SPRING CO., Hulton, near Pittsburgh, Pa., U. S. A.

PAT. Feb'y 11, 1879.



Peerless Tea Kettle.

The most durable and handsome kettle in the market, having the breast, sides, and a strengthening portion for the spout all spun from one piece of sheet metal and double-seamed to the pit, so that the seam is brougut under the sides of the kettle, forming a strengthening rib of four thicknesses of metal, at the point of greatest wear, upon which it rests when on the stove. By this means the objections to all other copper kettles are overcome. Sole manufacturers,

SUNDRY MFG. CO., Buffalo, N. Y.

The Iron Age Directory

and Index to Advertisements.

PAGE.

Agricultural Implements.
Johnson, Gere & Truman, Owego, N. Y.....26
Wheeler & Melick Co., Albany, N. Y.....33

Air Compressors.
Clayton Steam Pump Works, 14 and 16 Water st., Brooklyn, N. Y.....42

Alarm Money Drawers.
Tucker & Dorsey, Indianapolis, Ind.....10

Anti-Friction Metals.
Reeves Paul S., Philadelphia,.....42

Anvils, *Manufacturers of.*
Fisher & Norris, Trenton, N. J.....13

Architectural Iron Work.
Ætna Iron Co., 86 Goerck, N. Y.....4

Augers, Bits, etc., *Manufacturers of.*
Jennings C. E. & Co., 98 Chambers, N. Y.....42
Sedgwick Mfg. Co., Poughkeepsie, N. Y.....10
Snell Mfg. Co., 81 Beekman, N. Y.....8

Axe Wedge.
Porter & Wooster, Boston.....

Axles, Springs, &c., *Manufacturers of.*
Cook R. & Sons, Winsted, Conn.....19
Hotchkiss Guy C., Field & Co., 522 E. 14th, N. Y.....37
Lambertville Iron Works, Lambertville, N. J.....19
Sheldon & Co., Auburn, N. Y.....31

Bed Screws.
Shelton & Co., Birmingham, Ct.....19

Babbit Metal.
Philadelphia Smelting Co., 12th and Noble, Phila..35

Bag Holder.
Sprengle L. Jeff., Ashland, Ohio.....

Barb Wire.
Scutt H. B. & Co., Buffalo, N. Y.....33

Bellows, *Manufacturers of.*
Scott Geo. M., Chicago, Ill.....37

Bells (Sleigh.)
Bevin Bros. Mfg. Co., Easthampton, Conn.....36

Belting, *Makers of.*
Alexander Bros., 412 N. 3d, Philadelphia.....27
Forepaugh Wm. F., Jr., & Bros., Philadelphia.....27
N. Y. Belting and Packing Co., 37 Park Row, N. Y..9

Bicycles.
Pope Mfg. Co., 65 Summer, Boston.....2

Bird Cages, *Makers of.*
Jewett John C. & Sons, Buffalo, N. Y.....
Lindeman O. & Co., 254 Pearl, N. Y.....3
Maxheimer John, 247 and 249 Pearl, N. Y.....7

Bit Braces, *Manufacturers of.*
Backus Q. S., 102 Chambers N. Y.....25
Fray & Pigg, Bridgeport, Ct.....26
Millers Falls Co., 74 Chambers, N. Y.....25

Blocks, Tackle, *Makers of.*
Burr & Co., 31 Peck Slip, N. Y.....3
McMillan Wm. H. & Bro., 113 South, N. Y.....7
Penfield Block Works, Lockport, N. Y.....29
Providence Tool Co., Providence, R. I.....38

Blooms.
Eames' Petroleum Iron Works, Titusville, Pa.....34

Blowers and Exhaust Fans.
Sturtevant B. F., Boston.....41

Bolt Cutters.
National Bolt and Pipe Mach. Co., Cleveland, O....40
Sellers Wm. & Co., Phila. and 79 Liberty st., N. Y..41
Wiley & Russell, Greenfield, Mass.....16

Bolt Forging Machines.
Forsaith, S. C. & Co,, Manchester, N. H.....16

Bolts (Screw.)
Coleman Eagle Bolt Works, Philadelphia.....19

Brass, *Manufacturers of.*
Ansonia Brass and Copper Co., 19 Cliff, N. Y.....2
Bridgeport Brass Co., Bridgeport, Conn.....2
Brass Goods Mfg. Co., 43 Chambers, N. Y.....37
Davol John & Sons, 100 John, N. Y.....2
Holmes, Booth & Haydens, 49 Chambers, N. Y.....2
Manhattan Brass Co., 83 Reade, N. Y.....2
Merchant & Co., 507 Market st., Phila.....31
Plume & Atwood Mfg. Co., 80 Chambers, N. Y.....2
Rome Iron Works, Rome, N. Y.....4
Scovill Mfg. Co., 421 Broome, N. Y.....2
Waterbury Brass Co., 296 Broadway, N. Y.....2

Brass Founders.
Reeves Paul S., Philadelphia.....42

Brick Machines.
Miller S. P. & Son, 209 S. Fifth Phila.....36

Bridge Builders.
Moseley Iron Bridge and Roof Co., 4 Dey, N. Y. 5

Butcher and Shoe Knives, *Manufacturers of.*
Wilson John, Sheffield, England.....35

Butts and Hinges.
American Spiral Spring Butt Co., 82 Beekman, N. Y.42
New England Butt Co., 90 Platt, N. Y 31
Sabin Mfg. Co., Montpelier, Vt.....8
Stanley Works, New Britain, Conn.....8
Union Mfg. Co., 98 Chambers, N. Y.....7

Carriage Bolts, *Makers of.*
Shelton & Co., Birmingham, Ct.....19
Townsend, Wilson & Hubbard, Philadelphia.....19

Carriage Hardware, *Makers of.*
Pim Richard P., Wilmington, Del.....6
Smith H. D. & Co., Plantsville, Conn.....12
Wilcox & Howe, Birmingham, Conn.....8

Carriage Springs.
Dexter Spring Co., Hulton, Pa 26

Car Axles.
Roberts A. & P. & Co., 265 S. 4th, Philadelphia.....5

Cartridges.
Schuyler, Hartley & Graham, New York.....12

Casters.
Clark Geo. P., Windsor Locks, Conn.....18
Glass Ball Caster Co., 96 John, N. Y 10
Phœnix Caster Co., Indianapolis, Ind.....10

Castings, Iron.
St. Louis Malleable Iron Co., St. Louis, Mo.....19

Caulking Irons.
Carver John, 288 Monroe, N. Y.....26

Chisels, *Manufacturers of.*
Buck Bros., Millbury, Mass.....29

Chucks.
Cushman, A. F., Hartford, Conn.....40
The E. Horton & Son Co., Windsor Locks, Conn....18

Clock Springs, &c.
Cary & Moen, 234 W. 29th, N. Y.....3
Dunbar Bros., Bristol, Conn 36

Coal, *Miners of.*
Ely E. B. & S. W., New York.....8
Pardee A. & Co., 111 Broadway, N. Y.....6
The Hoboken Coal Co., Jersey City, N. J.....6

Coal Hods.
Esterbrook Wm., 311 Cherry, Phila.....33

Coal Vases.
Shepard Sidney & Co., Buffalo, N. Y.....31

Coffee and Spice Mills.
Lane Brothers, Millbrook, N. Y.....24
Enterprise Mfg. Co., Philadelphia, Pa.....27

Coke.
Wister Francis, 230 S. Third, Phila.....4

Compasses and Dividers, *Manufacturers of.*
Siemis & Call Hdw. & Tool Co., Springfield, Mass..29&34

Copper.
Merchant & Co., 507 Market st., Phila.....31
The New Haven Copper Co., 245 Pearl, N. Y.....2

Corn Huskers.
Chambers, Boring & Quinlan, Decatur, Ill.....7

Corrugated Iron.
Moseley Iron Bridge and Roof Co., 5 Dey, N. Y. 5

Countersink.
Barber D. F., 1321 Washington, Boston.....

Cradles, Grain.
Grant Fan Mill and Cradle Co., Melrose, N. Y.....24

Crucibles, *Manufacturers of.*
Wm. Siedel & Co., 709 Market, Phila.....37

Cutlery, *Importers of.*
Boker Hermann & Co., 101 Duane, N. Y.....28
Clatworthy F. & W., 82 Chambers, N. Y.....10
Friedmann & Lauterjung, 91 Chambers, N. Y 10

Cutlery, *Manufacturers of.*
Burkinshaw Aaron, Pepperell, Mass.....10
Goodell Company, Antrim, N. H.....11
Henry Seymour Cutlery Co., 84 Chambers, N. Y.....13
John Russell Cutlery Co., 90 Chambers, N. Y.....42
Meriden Cutlery Co., 49 Chambers, N. Y.....10
Rogers Wm., Wallingford, Conn.....10
Rogers Wm. & Son., Hartford, Ct.....11
The Lamson & Goodnow Mfg. Co., 98 Chambers, N. Y.....10
Wallace Bros., Wallingford, Ct.....17

Dash Lamps.
White Mfg. Co., Bridgeport, Conn.....28

Differential Pulley Blocks.
Yale Lock Mfg. Co., 43 Chambers, N. Y.....3

Dinner Pail and Lanterns.
Haight Jos., Portchester, N. Y.....42

Discount Tables.
Leigh Edw'd. B., St. Louis Elevator, St. Louis, Mo.20

Door and Gate Springs.
Dunne P. R., 182 Fulton, N. Y.....36
Van Wagoner & Williams, 82 Beekman, N. Y.....42

Door Bolts.
Ives Hobart B., New Haven, Ct.....

Drilling Machines, *Makers of.*
Boynton & Plummer, Worcester, Mass.....41
Sellers, Wm. & Co., Phila. and 79 Liberty st., N. Y.41
Taft Geo. C., Worcester, Mass.....
Thorne, De Haven & Co., Philadelphia.....40
Wiley & Russell Mfg. Co., Greenfield, Mass.....16

Drop Forgings.
Rose Wm. & Bros., West Philadelphia, Pa.....6
Merrill C. & Sons, 556 Grand, N. Y.....42

Drop Hammers.
The Stiles & Parker Press Co., Middletown, Ct.....41

Drop Presses.
Beecher & Peck, New Haven, Conn.....41

Edge Tools, *Makers of.*
Doscher M., 96 Chambers, N. Y.....36

Electric Machines.
Weston Dynamo-Electric Machine Co., Newark, N. J.....38

Elevators, *Makers of.*
Crane Bros. Mfg. Co., Chicago, Ill.....9&40
Stokes & Parrish, Philadelphia.....40

Elevator Buckets.
Rowland T. F., Brooklyn, N. Y.....36

Emery and Emery Wheels.
Irvine A. A. & Co., 14 Murray, N. Y.....34
Lehigh Valley Emery Wheel Co., Weissport, Pa....42

Engines, Air.
Sherrill Roper Air Engine Co., 91 Washington, N.Y.40

Engines, Gas.
Schleicher, Schumm & Co., Philadelphia.....41

Engines (Locomotive).
Baldwin Locomotive Works, Philadelphia, Pa.....6

Engines, Steam, *Makers of.*
Lane & Bodley Co., Cincinnati, O.....40
Lovegrove & Co., Philadelphia.....41
Shapley & Wells, Binghamton, N. Y.....40
Wetherill Robt. & Co., Chester, Pa.....41

Equalizer.
Bunger M. E. & Co., Indianapolis, Ind.....10

Faucets, Brass, *Makers of.*
McNab & Harlin Mfg. Co., 46 John, N. Y.....39

Faucets, Wood
Penfield Block Works, Lockport, N. Y.....29

Faucets, *Self-Measuring, Makers of.*
Enterprise Mfg. Co., of Pa., Phila. and N. Y.....27
Lane Bros., Millbrook, N. Y.....25

Files, *Importers of.*
Carr J. & Riley, 82 John, N. Y.....34
Moss F. W., 80 John, N. Y.....34

Files, *Manufacturers of.*
Auburn File Works, 89 Chambers, N. Y.....8
Barnett G. & H., 41 and 43 Richmond, Phila.....8
Disston Henry & Sons, Phila.....29
Draper C. T., Sing Sing, N. Y 8
Everhart James M., Scranton, Pa.....42
Johnson & Bro., 1 Commercial, Newark, N. J.....8
McCaffrey & Bro., 1732 and 1734 N. 4th, Phila.....8
Nicholson File Co., Providence, R. I.....36
Paul Chas. B., Williamsburgh, N. Y.....8
Spencer J. R. & Son, Sheffield, England.....10

Fire Arms.
Conway T. G., 90 Chambers, N. Y.....31

Fire Brick, *Makers of.*
Borgner & O'Brien, Philadelphia, Pa.....36
Brooklyn Clay Retort and Fire Brick Works, Van Dyke St., Brooklyn, N. Y.....36
Gardner Brothers, Pittsburgh, Pa.....36
Hall & Sons, Buffalo, N. Y.....26
Kreischer B. & Sons, 58 Goerck, N. Y.....36
Maurer Henry, 418 East 2nd, N. Y.....26
Newton & Co., Albany, N. Y.....36
Ostrander James & Son, Troy, N. Y.....36
Perth Amboy Terra Cotta Co., Perth Amboy, N. J..36
Valentine M. D. & Bro., Woodbridge, N. J.....36
Watson John R., Perth Amboy, N. J.....36

Flint and Emery Paper and Cloth.
Baeder, Adamson & Co., 730 Market, Phila.....33

Fluting Machines.
Shepard Hardware Co., Buffalo, N. Y.....31

Forges, Portable, &c.
Buffalo Forge Co., Buffalo, N. Y.....42
Empire Portable Forge Co., Cohoes, N. Y.....27
Keystone Portable Forge Co., 218 Carter, Phil.....40

Fossiliferous Ores.
Brown T. J., Rockwood, Tenn.....6

Foundry Facings.
Paxson J. W. & Co., 514 Beech, Phila.....5
Whitehead Bros., 517 W. 15th, N. Y.....4

Fry Pans.
N. Y. Stamping Co., 311 Avenue A, N. Y.....31

Furnaces, *Makers of.*
Richmond & Potts, 119 S. 4th, Phila., Pa.....5

Furniture Springs.
Carey & Moen, 234 W. 29th, N. Y.....3
Haigh J. Lloyd, 81 John, N. Y.....2

Galvanized Iron.
Lefferts Marshall, 90 Beekman, N. Y.....4

Garden Tools.
Dunlap C. W. & Co., 43 Chambers, N. Y.....13
Enterprise Mfg. Co., Geneva, Ohio.....10

Gearing.
Comly J., Lincoln Park, N. J.....

Governors.
Judson Junius & Son, Rochester, N. Y.....41

Grates.
Pennsylvania Heating and Ventilating Works, Philadelphia.....19

Grindstones.
Wood H. S. & Co., 33 West, N. Y.....34
Wood Walter R., 283 and 285 Front, N. Y.....34
Worthington & Sons, North Amherst, Ohio.....34

Gunpowder, *Makers of.*
Kneeland F. L. (Dupont) 70 Wall, N. Y.....28
Laflin & Rand Powder Co. 29 Murray, N. Y.....28

Handles, *Makers of.*
Hartigan Wm. R., Burlington, Conn.....13
Hundley & Hanks, 79 Reade, N. Y.....38

Hardware Commission Merchants.
Fernald & Silsby, 102 Chambers, N. Y.....6
Graham & Haines, 113 Chambers, N. Y.....8
Heaton & Denckla, 507 Commerce, Phila.....10
Hundley & Hanks, 79 Reade, N. Y.....38
Samuel S. L., 57 Cedar, N. Y.....3
Tennis & Wilson, 82 Beekman, N. Y.....8
Walbridge G. B., 102 Chambers, N. Y.....16
Whitley John R. & Co., London and Paris.....20

Hardware Dealers.
Lloyd, Supplee & Walton, 525 Market, Phila.....24
Shepard Sidney & Co., Buffalo, N. Y.....31

Hardware Importers.
Boker Hermann & Co., 101 Duane, N. Y.....5
McCoy & Co., 134 and 136 Duane, N. Y.....10

Hardware Manufacturers.
Comly Jas., 4739 Paul st., Philadelphia.....10
Coulter, Flagler & Co., 87 Chambers, N. Y.....
Cowles Hardware Co., Unionville, Conn.....18
Day, Farrington & Co., 295 Third ave., N. Y.....42
Enterprise Mfg. Co., Phila.....37
Greenfield Tool Co., Greenfield, Mass.....12
Lloyd, Supplee & Walton, 525 Market St., Phila., Pa.24
Miller's Falls Co., 74 Chambers, N. Y.....24
Payson & Mfg. Co., 1219 W. Jackson, Chicago.....25
Phila. Novelty Mfg. Co., 821 Cherry Phila.....9
Shannon J. B. & Sons, 1000 Market, Phila.....8
Shepard Hardware Co., Buffalo, N. Y.....31
Stanley Works, New Britain, Conn.....8
Star Salt Caster Co., Boston.....38
Tiebout W. J., 295 Pearl, N. Y.....30
Trenton Lock & Hardware Co., Trenton, N. J.....24
Union Mfg. Co., 99 Chambers, N. Y.....7
Van Wagoner & Williams, 82 Beekman, N. Y.....42

Hardware Specialties.
American Machine Co., 1025 N. 4th, Phila.....8
American Tool Co., 116 Chambers, N. Y.....3
Shepard Sidney & Co., Buffalo, N. Y.....31
Spencer & Underhill, 94 Chambers, N. Y.....8
Sprague Novelty Works, Rochester, N. Y.....33
Weeks A. A., 82 John, N. Y.....9

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.....25

Hay Knives.
Holt Hiram & Co., East Wilton, Me.....35

Hinges.
Stanley Works, New Britain Conn.....8

Hog Ringers.
Chambers, Bering & Quinlan, Decatur, Ill.....7

Hoisting Engines, *Makers of.*
Crane Bros., Mfg. Co., Chicago, Ill.....9&40

Hoisting Machines.
Box Alfred & Co., 312 Green, Phila.....41
Clem & Morse, 413 Cherry, Philadelphia.....26
Harrington Edwin & Son, Philadelphia, Pa.....41
Sellers Wm. & Co., Phila. and 79 Liberty st., N. Y..41

Hollow Chilled Rolls.
Totten & Co., Pittsburgh, Pa.....16

Hollow Ware.
Wells W. T., 78 Beekman, N. Y.....4

Hooks (Cotton & Bale.)
New York Handle & Mallet Works, 456 E. Houston..13

Horse Clippers.
Boker, Hermann & Co., 101 & 103 Duane, N. Y.....28
Clark W., 232 Oxford, London, England.....16

Horse Nails, *Makers of.*
Ausable Horse Nail Co., 4 Warren, N. Y.....29
Bridgewater Iron Co., Bridgewater, Mass.....6
I P Nail Co., Cleveland, O.....28
National Horse Nail Co., Vergennes, Vt.....25
Putnam Nail Co., Boston.....9
Saranac Horse Nail Co., Plattsburg, N. Y.....12

Horse Shoes, *Makers of.*
Burden Iron Works, Troy, N. Y.....4
Rhode Island Horse Shoe Co., Providence, R. I.....27
Schoenberger & Co., Pittsburgh, Pa.....4

Housefurnishing Goods.
Pierce Geo. N., Buffalo, N. Y.....39

Hydrants, &c.
McLean John, 300 Monroe, N. Y.....37
Mohawk & Hudson Mfg. Co., Waterford, N. Y.....29

Hydraulic Jacks.
Dudgeon Richard, 24 Columbia, N. Y.....9
Lyon E. & Co., 470 Grand, N. Y.....

Ice Cream Freezers.
White Mountain Freezer Co., Laconia, N. H.....39

Ice Creepers.
Childs, Groff & Co., Cleveland, Ohio.....5

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co..41

Iron Brokers.
Boynton Geo. A., 70 Wall, N. Y.....4
Etting Edward J., Philadelphia, Pa.....5
Hatry A. G., Pittsburgh, Pa.....4

Iron, Charcoal, *Warm or Cold Blast.*
Quincy John W., 98 William N. Y.....4

Iron Commission Merchants.
Bailey J. F. & Co., 52 Wall, N. Y.....5
Lowe S. B., Chattanooga, Tenn.....6
Mohr J. J., 430 Walnut, Philadelphia 5
Richardson J. O., 232 Dock, Philadelphia.....5
Wister L. & R., 323 Walnut. Phila.....5

Iron, Pig, *Importers of.*
Swan John E. & Bro., Glasgow, Scotland.....20
Williamson James & Co., 69 Wall, N. Y.....4

Iron Dealers.
Abeel Brothers, 190 South, N. Y.....4
Bonnell, Botsford & Co., Youngstown, O.....4
Borden & Lovell, 70 and 71 West, N. Y.....4
Carmichael W. J., 130 and 132 Cedar, N. Y.....4
Cooney Daniel F., 88 Washington, N. Y.....4
Egleston Bros. & Co., 166 South, N. Y.....4
Harrison & Gilloon, 458 to 462 Water, N. Y.....4
Hoffman J. W. & Co., 208 S. Fourth, Philadelphia..5
Judson B. F., 457 and 459 Water, N. Y.....4
Kane C., Pittsburgh, Pa.....4
Lundberg Gustaf, 38 Kilby, Boston, Mass.....4
Middleton W. S., 52 John, N. Y.....4
Ogden & Wallace, 85, 87, 89 and 91 Elm, N. Y.....4
Pierson & Co., 24 Broadway, N. Y.....4
Pullman J. Wesley, Philadelphia, Pa.....5
Quincy John W., 98 William, N. Y.....4
Richards D. W. & Co., 92 Mangin, N. Y.....20
Wallace Wm. H. & Co., Albany and Washington streets, N. Y.....4
Warner A. B. & Son, 28 and 29 West, N. Y.....4
Williamson James & Co., 69 Wall, N. Y.....4
Whitney A. R., 48 Hudson, N. Y.....4

Iron, *(Manufacturers' Agents.)*
Cox, Jr., Justice & Co., 333 Walnut, Phila.....5
Hoffman J. W. & Co., 208 S. 4th, Phila.....5
Levis Henry & Co., Philadelphia, Pa.....5

Iron, *Manufacturers of.*
Albany & Rensselaer Iron & Steel Co., Troy N. Y...34
Bradley, Reis & Co., New Castle, Pa.....4
Britton Iron and Steel Co., Cleveland, Ohio.....6
Burden Iron Works, Troy, N. Y.....4
Condit, Wick & Co., Cleveland, Ohio.....2
Houdlette & Ellis, Boston, Mass.....4
Kirkpatrick, Beale & Co., Pittsburgh Pa.....4
Kloman Andrew, Pittsburgh, Pa.....4
North Chicago Rolling Mill Co., Chicago, Ill.....35
Phœnix Iron Co., 410 Walnut, Philadelphia.....5
Portsmouth Iron and Steel Co., Portsmouth, Ohio. 4
Roane Iron Co., Chattanooga, Tenn.....6
Rome Merchant Iron Mills, Rome, N. Y.....4
Rowland James & Co., 920 N. Delaware ave., Phila. 5
Rowland Wm. & Harvey, Philadelphia.....42
Shoenberger & Co., Pittsburgh, Pa.....4
Taylor & Boggs, Cleveland, O.....6
The Passaic Rolling Mill Co., Paterson, N. J.....4
Ulster Iron Works, 90 Broadway.....4
U. S. Iron and Tin Plate Co., Pittsburgh, Pa.....4
Wood Alan & Co., 519 Arch Philadelphia.....5
Zug & Co., Pittsburgh, Pa.....4

Iron, Planished Sheet, *Manufacturers of*
Wood W. D. & Co. Pittsburgh, Pa.....4

Jack Screws.
Wynn. R. D., Windsor, Vt.....39

Jacks, Lifting.
Dinsmore Mfg. Co., 235 Washington, Boston.....37

Lanterns, *Manufacturers of.*
Dietz R. E. 54 and 56 Fulton, N. Y.....42
DuBrul N. & Co., Cincinnati, O.....28
Howard & Morse, 45 Fulton, N. Y.....2

Lathes.
Johnson, Jr. Israel H. & Co., Philadelphia.....37

Leveling Instruments.
Bicknell & Comstock, 27 Warren, N. Y.....26

Levels.
Disston Henry & Sons., Philadelphia.....29

Locks, *Manufacturers of.*
Bohannan Wilson, Broadway and Kossuth, Brooklyn, E. D.....10
Hillebrand & Wolf, 110 S. 8th, Philadelphia.....9
Romer & Co., Newark, N. J.....
Schroder Lock Co., Cincinnati, Ohio.....10
Smith & Egge Mfg. Co., Bridgeport, Conn.....8
Yale Lock Mfg. Co., 53 Chambers, N. Y.....3

Lubricator.
Harper Steam Lubricator Co., Westville, Conn. ...26

Machinery, *Makers of.*
Bliss & Williams, 167 Plymouth, Brooklyn.....40
Box Alfred & Co., 312 Green, Phila.....41
Cooke Wm., 6 Cortlandt, N. Y.....40
Cuyahoga Works, Cleveland, Ohio.....41
Landis Ezra F., Lancaster, Pa.....
L. B. Flanders Machine Works, 1025 Hamilton, Phila.....39
Forsaith S. C. & Co., Manchester, N. H.....16
Garvin E. E. & Co. 139 Center, N. Y.....41
Monawk & Hudson Mfg. Co., Waterford, N. Y.....29
Pittsburgh Mfg. Co., Pittsburgh, Pa.....40
Pratt & Whitney Co., Hartford, Conn.....40
Sellers Wm. & Co., Phila. and 79 Liberty st., N. Y.41
The Stiles & Parker Press Co., Middletown, Ct.....41
Wetherill Robert & Co., Chester, Pa.....41

Machinery (Barnes's Foot Power.)
Little Chas. E., 69 Fulton, N. Y.....10

Machine Screws, *Makers of.*
Hartford Machine Screw Co., Hartford, Conn.....33
Fellows John, Williamsburg, N. Y.....38
Waterbury Mfg. Co., Waterbury, Conn.....42

Machinists' Tools.
Blaisdell P. & Co., Worcester, Mass.....40
Bullard E. P. 14 Dey, N. Y.
Cooke Wm., 6 Cortlandt, N. Y.....40
The Geo. Place Machinery Agency, 121 Chambers, N. Y.....20
Harrington E. & Son, 15th st. and Pennsylvania ave., Philadelphia, Pa.....41
King J. M. & Co., Waterford, N. Y.....6
Sellers Wm. & Co., Phila. and 79 Liberty st., N. Y..41

Malleable Iron Castings, *Makers of.*
Hammer & Co., Branford, Conn.....39

Mallets.
N. Y. Handle and Mallet Works, 456 E. Houston....13
Penfield Block Works, Lockport, N. Y.....29

Manganese.
Pyrolusite Manganese Co., 54 Cliff, N. Y.....35

Mechanics' Tools.
Jennings C. E. & Co., 98 Chambers, N. Y.....42

Measuring Tapes.
Eddy Geo. M. & Co., 353 Classon Ave., Brooklyn, N.Y.29

Meat Chopping Machinery.
Murray Iron Works, Burlington, Iowa.....25
Silver & Deming Mfg. Co., Salem, O.....6

Metals.
Dickerson, Van Dusen & Co., 29 and 31 Cliff, N. Y... 2
Graves O. W. & Co., cor. Cliff and Beekman, N. Y. 4
Phelps, Dodge & Co., Cliff, bet. John & Fulton, N. Y. 2
Phosphor Bronze Smelting Co., 2038 Washington av., Phila.....5
Purves A. & Son, cor. South and Penn, Phila.....5
Quincy J. W., 98 William, N. Y.....6
Read, D. W. R. & Co., 205½ Walnut, Phila.....5
Sellew R. & Co., St. Louis, Mo.....3
Schoenberg Metal Mfg. Co., 413 E. 19th, N. Y.....3
Starr John. Halifax, Nova Scotia.....31

Metallurgists.
Booth, Garrett & Blair, 919 Chant, Philadelphia.....5
Britton J. Biodgett, 339 Walnut, Philadelphia.....5

Mincing Knives.
Philadelphia Novelty Mfg. Co., 821 Cherry, Phila..9

Miners' Candles, *Makers of.*
James Boyd's Sons, 10 and 12 Franklin, N. Y.....6

Mineral Wool.
Elbers Alexander D., 263½ Broadway, N. Y.....8

Molding Sand.
Whitehead Bros., 517 W. 15th, N. Y.....4

Mouse Traps.
Dietz R. E., 54 and 56 Fulton N. Y.....42
Oliver E., 106 and 108 Beekman N. Y.....3
Ripley Mfg. Co., Unionville, Conn.....

Nails.
Oxford Iron Co., 81 Washington, N. Y.....4
Rowland Jas. & Co., 920 N. Delaware, Ave., Phila. 5
Schoenberger & Co., Pittsburgh, Pa.....4
Zug & Co., Pittsburgh, Pa.....4

Nail Machinery.
Pittsburgh Mfg. Co., Pittsburgh, Pa.....40

Nickel Platers' Supplies.
Condit, Hanson & Van Winkle, Newark, N. J.....19
Zucker & Levett, 640 and 641 W. 21st. N. Y.....27

Nippers.
Delamater C. H. & Co., 10 Cortlandt, N. Y.....3
Interchangeable Tool Co., of New York.....28

Norway Shapers, *Rollers of.*
Rowland Wm. & Harvey, Frankford, Philadelphia.42

Note Broker.
Gallaudet P. W., 3 and 5 Wall, N. Y.....4

Nuts, Bolts, etc., *Makers of.*
Allentown Rolling Mill Co., Allentown, Pa.....5
Haskell W. H. & Co., Pawtucket, R. I.....29
Russell, Burdsall & Ward, Port Chester, N. Y.....42
Standard Nut Co., Pittsburgh, Pa.....39
Sternbergh J. H., Reading, Pa.....42

Oil Stones.
Boyd & Chase, 127th and Harlem River, N. Y.....34

Ores.
Chester Iron Co., 407 Walnut, Philadelphia.....5
Read, D. W. R. & Co., 205½ Walnut, Philadelphia..5

Patent Solicitors.
Howson & Son, Phila. and Washington, D. C.....8
Stetson Thomas D., 23 Murray, N. Y.....8
Tracy Geo. C. & Co., Cleveland, O. 27

Pens, Steel.
Esterbrook Steel Pen Co., New York.....19

Phosphor Bronze.
Phosphor Bronze Smelting Co., 2038 Washington ave., Philadelphia.....5

Pianos.
Beatty Daniel F., Washington, N. J.....36

Picks, *Makers of.*
Pierson & Co., 24 Broadway, N. Y.....4

Pipes, Fittings, etc., *Makers of.*
McNab & Harlin Mfg. Co., 46 John, N. Y.....39
Pancoast & Maule, 227 Pear, Philadelphia.....38

Pipe, Water and Gas, *Makers of.*
McNeals & Archer, Burlington, N. J.....6
Wood R. D. & Co., 400 Chestnut, Philadelphia.....39

Plane Irons, *Manufacturers of.*
Buck Bros., Millbury, Mass.....29

Planes, *Manufacturers of.*
Stanley Rule and Level Co., 29 Chambers, N. Y 10

Plated Ware.
Hall, Elton & Co., 70 Chambers, N. Y.....11
Rogers Wm. & Son., Hartford Ct.....11

Plows.
Norwegian Plow Co., Dubuque, Iowa.....25

Plumbers' Materials, *Manufacturers of.*
Carr Wm. S. & Co., 106 Center, N. Y.....39
Everhart Jas. M., Scranton, Pa.....42

Pocket Knives.
Boker Hermann & Co., 101 Duane, N. Y.....28

Power Hammers.
Forsaith, S. C. & Co., Manchester, N. H.....16

Presses, Fruit and Vegetable.
Mohawk & Hudson Mfg. Co., Waterford, N. Y.....29

Presses, Power, *Makers of.*
Bliss & Williams, 167 Plymouth, Brooklyn.....40
Merriman A. H., West Meriden, Conn.....41
Peerless Punch & Shear Co., 52 Dey N. Y.....41
The Stiles & Parker Press Co., Middletown, Ct.....41

Pruners, Tree.
Lee E. S. & Co., Rochester, N. Y.....42

Pulleys.
Brown A. & F., 57 Lewis, N. Y 40
Oesterline W., Cincinnati, Ohio.....
Penfield Block Works, Lockport, N. Y.....29
Providence Tool Co., Providence, R. 38

Pumps, *Makers of.*
Acid Pump & Siphon Co., New London, Conn.....10
Douglas W. & B., Middletown, Conn.....7
Gunnison A. B., Erie, Penn.....29
Rumsey & Co., Seneca Falls, N. Y.....7
Rumsey L. M. & Co., St. Louis, Mo.....38
Union Mfg. Co., 98 Chambers, N. Y.....7

Rails, Iron and Steel, *Makers of.*
Cambria Iron Co., Johnstown, Pa.....5
Cleveland Rolling Mill Co. Cleveland, Ohio.....34
Nixon Bros., Newcastle-on-Tyne, England.....20
The Edgar Thomson Steel Co., 57 Broadway, N. Y..25

Rivets.
Gilmor Wm., of Wm., Baltimore, Md.....42
Grundy Geo. C., 164 Greenwich, N. Y.....10
Townsend W. P. & Co. Pittsburgh, Pa.....13

Rock Breakers.
Blake Crusher Co., New Haven, Conn.....19
Gates & Scovill Iron Works, 52 Canal, Chicago.....40

Rolls (Chilled).
Garrison A. & Co., Pittsburgh, Pa.....6

Roll Grinding Machines.
J. Morton Poole Co., Wilmington, Del.....37

Rules, *Manufacturers of*
Stanley Rule and Level Co., 29 Chambers, N. Y.....10

Sad Irons.
Chalfant Mfg. Co., 135 Arch, Philadelphia.....16
Enterprise Mfg. Co., Philadelphia.....27

Sand and Emery Paper, *Makers of.*
Baeder, Adamson & Co., 730 Market, Philadelphia..23

Saws, *Makers of.*
American Saw Co., Trenton, N. J.....38
Boynton E. M., 80 Beekman, N. Y.....42
Disston Henry & Sons, Phila.....29
Gerlach Peter & Co., Cleveland, Ohio.....12
Queen City Cabinet Co., Cincinnati Ohio 8
Wheeler, Madden & Clemsen Mfg. Co., Middletown, N. Y.....38

Scales, *Manufacturers of.*
Chatillon John & Sons, 91 Cliff, N. Y.....19
Howe Scale Co., Rutland, Vt.....18
Rienle Bros., 9th above Master, Phila.....39

Screws, *Makers of.*
Miles F. S., 205 Quarry, Phila.....13
Philadelphia Screw Co., Philadelphia, Pa.....39

Screw Cutting Machinery.
Wiley & Russell Mfg. Co., Greenfield, Mass.....16

Screw Drivers, *(Improved) Makers of*
Disston Henry & Sons Phila 39

Scythes.
Beardsley Scythe Co., West Winsted, Conn.....16

Scythe Stones.
Pike A. F., East Haverhill, N. H.....16

Second Hand Machinery.
Forsaith, S. C. & Co., Manchester, N. H.....16

Shafting, Makers of.
Sellers Wm. & Co., Phila. and 79 Liberty st., N. Y..41

Shears (Sheep).
Field Alfred & Co., 92 Chambers, N. Y.....10
Hildick A. H., 12 Warren, N. Y.....10

Skates.
Peck & Snyder, 124 Nassau, N. Y.....25

Shot, &c.
Sparks Thos. W., 121 Walnut, Philadelphia.....25

Shovels, Spades and Scoops.
Hussey, Binns & Co. Pittsburgh, Pa.....12

Shutters, Steel and Wood.
Clark & Co., 152 W. 27th, N. Y.....8

Smelting Works.
Philadelphia Smelting Co., 12th and Noble sts., Philadelphia.....35
Reeves Paul S., 760 South Broad, Phila.....42

Snaths.
Vermont Snath Co., Springfield, Vt.....26

Speaking Tubes.
Ostrander W. R., 19 Ann N. Y.....

Spelter.
Manning & Squier, 113 Liberty, N. Y.....2
Osgood F. & Co., Bergen Port, N. J.....29

Spiegeleisen.
Wright Peter & Sons, 52 Broadway, N. Y.....5

Spoons.
Rogers Wm. & Son., Hartford, Ct.....11

Springs.
Carey & Moen, 234 W. 29th, N. Y.....3
Gautier Steel Co., Ld., Johnstown. Pa.....2&34
Rowland Wm. & Harvey, Frankford, Phila.....42

Steam Boilers.
Babcock & Wilcox, 30 Cortlandt, N. Y.....40

Steam Hammers, &c., *Makers of.*
Dudgeon Richard, 24 Columbia, N. Y.....9

Steam Pumps, &c., *Manufacturers of.*
Cameron A. S., East 23d, N. Y.....40
Clayton Steam Pump Works, 14 and 16 Water st., Brooklyn, N. Y.....42
Crane Bros. Mfg. Co., Chicago, Ill.....9&40
Kelly Wm. E., 40 Cortlandt, N. Y.....33
McGowan John H. & Co., Cincinnati, O.....41
Storer G. W., 122 N. 3d, Philadelphia.....40
The Norwalk Iron Works Co., So. Norwalk, Ct.....31

Steel Castings, *Manufacturers of.*
Chester Steel Castings Co., Evelina, Phila., Pa.....42
Eureka Cast Steel Co., Chester, Pa.....42
Flagg Stanley G. & Co., 216 and 218 N. 3d, Phila.....42
Pittsburgh Steel Casting Co., Pittsburgh, Pa.....42

Steel Importers.
Carr J. & Riley, 82 John, N. Y.....34
Hobson Francis & Son, 97 John, N. Y.....34
McCoy & Co., 134 and 136 Duane, N. Y.....10
Moss F. W., 80 John, N. Y.....34
Pierson & Co., 24 Broadway, N. Y.....4
Wolff R. H. & Co., 16 Cliff, N. Y.....34

Steel (Mushet's Special.)
Rand

NEW YORK WHOLESALE PRICES, DECEMBER 3, 1879.

METALS.

IRON.—DUTY: Bars, 1 to 1½c. ₩ ℔; Sheet, Band Hoop and Scroll, 1¼ to 1¾c. ₩ ℔; provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 ₩ ton; Polished Sheet, 3c. ₩ ℔; Wrought Scrap, $8 ₩ ton; Cast Scrap, $6 per ton. Railroad 70c. ₩ 100 ℔s. Boiler and Plate, 1½c. ₩ ℔.

Pig Iron—AMERICAN Nominal.

Foundry No. 1		₩ ton	$27.00 @
" No. 2		₩ ton	26.00 @
Gray Forge		₩ ton	25.00 @ 26.00

SCOTCH.

Eglinton	₩ ton	24.00 @ 25.00
Coltness	₩ ton	27.00 @
Glengarnock	₩ ton	25.00 @
Gartsherrie	₩ ton	26.00 @

Rails.

Iron	₩ ton $50.00 @ 53.00
Steel	₩ ton 63.00 @ 66.00
Old Rails	₩ ton 31.50 @ 32.00

Scrap.

Wrought Scrap, from yard	₩ ton 34.50 @ 35.00

Bar Iron, from Store.

Common Iron: ⅜ to 2 in. round and square; 1 to 6 in. x ⅜ to 1 in.	₩ ℔ 3.00
Refined Iron: ⅜ to 2 in. round and square; 1 to 6 in. x ⅜ to 1 in.	₩ ℔ 3.20
1 to 6 in. x ¼ and 5-16	₩ ℔ 3.40
Rods—⅜ and 11-10 round and square	₩ ℔ 3.80
Bands—1 to 6x3-16 to No. 12	₩ ℔ 3.60
Norway Nail Rods	.60

Sheet Iron.

	Common American	R. G. American.
Nos. 10 to 20	₩ ℔ 4¾c	5¾
21 to 24	₩ ℔ 5 c	5¾
25 to 26	₩ ℔ 5¼c	6
27	₩ ℔ 5½c	6¼
28	₩ ℔ 5¾c	6¾

Galvanized, 10 to 20, B. B. ₩ ℔ 100; 2d qual. ₩ ℔ 9 c
" 21 to 24, " ₩ ℔ 110; " ₩ ℔ 10c
" 25 to 26, " ₩ ℔ 120; " ₩ ℔ 11c
" 27 " ₩ ℔ 130; " ₩ ℔ 12c
" 28 " ₩ ℔ 140; " ₩ ℔ 13c

Patent Planished ₩ ℔ A. 11c; B, 10c
Russia ₩ ℔ Nos. 8 & 9, 15c; 10, 14c; 11 & 14, 13½c
American Cold Rolled ₩ ℔ 6@6½c

COPPER.—DUTY: Pig, Bar and Ingo t, 5c; Old Copper 4c ℔; ₩ Manufactured (including all article of which Copper is a component of chief value), 45 % ad valorem.

American Ingot ₩ ℔ See Trade Report.

SHEATHING, BRAZIERS' COPPER, BOLTS, &c.

Braziers' Copper, ordinary sizes, 1608. per sq. ft., and over per lb. 30c
For tinning both sides, double the above amount
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., ₩ sq. ft. ₩ ℔ 32c
Braziers Copper 10 oz and 12 oz., ₩ sq. ft. ₩ ℔ 34c
" Lighter than 10 oz. ₩ sq. ft ₩ ℔ 36c
Circles less than 84 in. in diameter ₩ ℔ 33c
Circles 84 in. diameter and over ₩ ℔ 36c
Segment and Pattern Sheets ₩ ℔ 33c
Locomotive Fire Box Sheets ₩ ℔ 30c
Sheathing Copper, over 12 oz. ₩ sq. ft. ₩ ℔ 28c
Bolt Copper ₩ ℔ 30c
Copper Bottoms ₩ ℔ 34c
No Copper is Sheathing except 14x48 inches and not to exceed 34 oz. to the sq. ft.

TINNING.

14x48 ₩ sheet 6c
All other size Sheets, 25c. per square foot.

O'NEILL' SPATE FINISHED COPPER.—Not.

14x48.

14 and 16 oz. and heavier ₩ ℔ 37c By the case. ₩ ℔ 36c
12 oz. and lighter " ₩ ℔ 40c " ₩ ℔ 39c

Boiler Sizes.

7 in., 14x52. 6 in., 14x60. 9 in., 14x60.
14 and 16 oz. and heavier ₩ ℔ 39c By the case. ₩ ℔ 38c
(And all sizes not over 20 in. wide.)
30x60.
14 and 16 oz. and heavier ₩ ℔ 41c
12 oz. ₩ ℔ 44c

Brass.

Brown & Sharp's Gauge the Standard for Metal; Old English Gauge the Standard for Wire.

BRASS MANUFACTURERS' PRICE LIST.—dis nominal. July 1, 1878.

Cash prices for Roll and Sheet Brass. For less quantity than 100 ℔s. add 3c ₩ ℔.

HIGH BRASS.

All Nos. not thinner than to No. 28, wider than 2 in., not wider than 14 in. 24c
All Nos. to No. 26, inclusive, and widths over 14 to 20 in., inclusive. 30c
All Nos. to No. 28, inclusive, and widths over 20 to 30 in., inclusive 33c
3c. ₩ ℔ advance on each No. above Nos. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass, at 42c
Sheets 24x48, and all sheets cut to particular sizes and lengths under 30 in., in width wider than 2 in. 33c
Printers' Rules 40c
Sheets wider than 30 in. and under 40 in. 42c
" 40 in. and over 45c
Circular Sheets, in diam. from 4 in. to 14, inclusive. 30c
" " over 14 " 20 " 40c
" " " 20 " 30 " 44c
" " " 30 " 40 " 50c
" " " 40 in. 54c

LOW BRASS.

4c ₩ ℔ more than High Brass,
Gilding Metal, 8c ₩ ℔ more than High Brass.
Platers' or Gold Metal { In Bars 43c; Sawed 46c; Planed or Polished 49c

FOR SLITTING.

Metal in width 2 in. to ⅛ in. to No. 28, inclusive, 1c. ₩ ℔ advance.
Metal, in width 2 in to 1 in., thinner than No. 28, 2c. ₩ ℔ advance.
Metal, in width 1 in. to ⅛ thinner than No. 28, 3c ₩ ℔ advance
Metal, in width ⅛ in. to ¼, inclusive, not thinner than No. 28, 2c. ₩ ℔ advance.
Metal, in width ⅛ in. to ¼ thinner than No. 28, 3c. ₩ ℔ advance.
Metal, ¼ in. in width and less, 10c. ₩ ℔ advance.
Any of the above widths cut to particular lengths, add 7c. ₩ ℔.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire.
4 per cent., 12 inch, to No. 26	$0.52	$0.70
6 " " "	58	76
10 " " "	64	.83
15 " " "	.74	1.03
18 " " "	.80	1.12

German Silver Sheets over 12in. wide and weighing more than 10 ℔s., $2.00 ₩ ℔.
Advance 2c. for each additional inch in width above 1 in., and 2c. ₩ ℔ on each No. thinner than Nos. 26 to 3, inclusive
All German Silver thinner than No. 36 is Platers, at 50c ₩ ℔ additional.
German Silver Scrap one-half less than net price of 12 in. Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.

BRASS AND COPPER WIRE.

	High Brass.	LOW Brass.	Gild'g and Copper.
No.0 to 20	$0.28	$0.32	$0.38
No.21	.31	.35	.41
No.22	.32	.36	.42
No.23	.33	.37	.43
No.24	.35	.40	.45
No.25	.38	.42	.48
No.26	.40	.44	.50
No.27	.43	.47	.53
No.28	.47	.51	.58
No.29	.50	.54	.61
No.30	.53	.57	.67
No.31	.57	.61	.73
No.32	.61	.64	.77
No.33	.65	.69	.86
No 34	.69	.71	.96

Spring Wire 2c ₩ ℔ advance.
Flat, Square and Half Round Wire 5c ₩ ℔ advance on Round Wire.
Fancy Wire not less than 10c ₩ ℔ advance of Round Wire,
Brass Rods, No. 8 and larger not less than 2 feet engths, 33c.
Wire straightened and cut, smaller than No. 8, and not less than 2 feet lengths, 38c.
Wire and Rods less than 2 feet lengths, special rates
Twelve cents per ℔ extra for spooling on 1 ℔ spools.

MISCELLANEOUS.

Common Plain Brass Pail Ears	$0.36
Brass Door Rail	.78

SCRAP.—net.

High Brass Scrap	11c
Low "	13c
Gilding "	14c

Turnings, Filings and Chips half the price of Scrap.
Terms—Net cash. Interest to be added after thirty days.

TUBING.—dis 10 %

	₩ ℔
Plain to No. 20 inclusive above ¼ in. to 3 in.	$0.38
" above 3 in.	.48

Nos. 21, 22, 23, two cents advance on List for each Number.
Nos. 24, 25, 26, four cents advance on List for each Number.
Above No. 26, special rates.

Plain, ¼ inch	.65
" 3-16 "	1.05
" ⅛ "	1.55

All Mandrel Drawn Tubes, 5 cents advance on List Prices.
Fancy Tubing to No. 20 45c
English, Scotch and Extra Patterns Fancy Tubing to No. 20 50
Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List.
Add to 2 cents ¼ cent for each additional cutting under 2 feet.
All Mandrel Drawn Tubes under ⅜ in., 25 cents per pound advance.

ZINC TUBING.—net.

Plain	.22
Fancy	.28
Scotch and Extra Patterns	.31

GERMAN SILVER TUBING.—dis 10 %

4 Per cent.	.75
6 "	.85
9 "	1.00
12 "	1.15
15 "	1.20
16 "	1.35
18 "	1.45
20 "	1.55

STEEL.—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents ₩ ℔., or under, 2¼ cents; over, 7 cents, and not above 11, 3 cents ₩ ℔; over 11, 3½ cents ₩ ℔, and 10 % ad val. Railway Bars, 1¼ cents ₩ ℔. Railway Bars, in part Steel, 1 cent ₩ ℔. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.

Tool	.12½c
Spring	.8c
Homogeneous	.8c
Boiler Plate	.8c
Tire	.9c
Machinery (round and square)	.7c
File	.8½c
Sheet	.9 @ 14c
Saw Plate, mill and mulay	.11c
" gang and X cut	.11c

English Steel.—

Best Cast	₩ ℔ 15½c
Extra Cast	₩ ℔ 16½c
Round Machinery, Cast	₩ ℔ 10c
Swaged, Cast	₩ ℔ 18c
Best Double Shear	₩ ℔ 15½c
Blister, 1st quality	₩ ℔ 13c
German Steel, Best	₩ ℔ 11c
" 2d quality	₩ ℔ 10c
" 3d quality	₩ ℔ 9c
Sheet Cast Steel, 1st quality	₩ ℔ 15½c
" 2d quality	₩ ℔ 14½c
" 3d quality	₩ ℔ 12½c

ANTIMONY .19c

LEAD.—DUTY Pig $2 ₩ 100 ℔s; old Lead, 1½c ₩ ℔
Pipe and Sheet, 2½c ₩ ℔.

American	5½c
Bar	7 c dis 10 %
Pipe	7½c. dis 10 %
Tin Lined Pipe	10c. dis 10 %
Sheet	8c. dis 10 %
Shot Drop 8c, Buck. 9c, dis 10 %	
Chilled Shot	9½c. dis 10 %

BABBITT METAL.

N. P. U	₩ ℔ 6 @ 7c
A 20c; B, 16c; C, 12c.	

TIN.—DUTY: Plates, Sheets, Tagger and Terne, 1.1c ₩ ℔; Electro-galvanized Plates, 2c ₩ ℔; Manufactures of, not enumerated, 35 per cent. ad. val. Bars, Block and Pigs free. Banca, subject to duty of 10 per cent.

Banca	₩ ℔ 26 @ 27c
Straits	₩ ℔ 24 @ 25c
English	₩ ℔ 24 @ 25c

TIN PLATES.

I C 10x14 / 14x20	Prime Charcoal	$8.25 @ 8.50
C 12x12	"	8.50 @ 9.00
X 10x14 / 14x20	Charcoal	10.40 @ 10.75
I X 12x12	"	10.75 @ 11.00
D C 12½x17		7.75 @ 8.00
D X 12½x17		9.75 @ 10.00
For each additional X add		2.00

COKE TIN PLATE.

	Best.	2d quality.	Ordinary.
I C 10x14 / I C 14x20	$7.75	7.50	7.25 @ 7.50
I C 12x12	8.00	7.75	@ 7.75

TERNE PLATE

	Prime Char.	2d qual.	Coke.
I C 14x20	7.50 @ 7.75	7.25 @ 7.50	7.00 @ 7.25
I X 14x20	@ 9.50		
I C 20x28	@ 16.00	15.00 @ 15.50	13.50 @ 14 50
I X 20x28	@ 19.00		
I C 20x200	@ 22.00		
I C 14x20 M. F. Brand			@9.50

SOLDER .NO. 1. 13c @ 14c; No. 2, 12c

SPELTER—DUTY: in Pigs, Bars and Plates, $1 ₩ 100 ℔s.

American, cash	6½c
Bergen Port from Lehigh Ore	10c
Lehigh, on spot	9c

ZINC.—DUTY: Pig or Block, 1.50 ₩ 100 ℔s. Sheet, 2½c ₩ ℔.

Sheet, Cask	8½ @ 8½
" Open	9 @ 9½

Paper Stock, &c.

(Dealer's Selling Price.)

Canvas linen	4 @ 4½
White cotton, new	3½ @
" " No 2	2½ @ 3
White linen rags, No. 1	4 @ 4½
" " No. 2	@ 3
Seconds	2 @
Mixed woolens	2½ @ 3¼
Soft woolens	14 @ 15
Gunny bagging	2½ @
Jute Butts	3 @ 3½
Kentucky bagging	4½ @
Waste paper and scraps	1 @
Rope cuttings	1½ @ 3
Kentucky bale rope	4 @ 4¼
Grass rope	3 @ 3¼
Tarred shaking	1½ @
Hard White Shavings, No. 1	3½ @
Soft " No. 1	3 @
White Shavings, No. 2	2½ @
Mixed Shavings, part white	2¼ @
Imperfections, No. 2, best folded sheets	3¼ @
" No. 1, Heavy Stock	3½ @
Book Stock	2¾ @
" " Heavy	3 @
" " Light	1¼ @
Newspapers	2¼ @
Prints	1¾ @
Pure Manilas	3 @ 2¾
Bogus Manilas and Hardwares	¾ @ 1
Commons	50 @
Binders' Board Cuttings	80 @
Straw Board Cuttings	75 @
Woolen Tailor Clips	1½ @
Satinet "	2½ @ 3

Paints, Oils, &c.

Paints.

Black Lamp, Coach Painters	₩ ℔ 20c
" " Ordinary	6c
" Ivory Drop, fair	12 @ 14c
" " best	23c
Black Paint, in oil kegs, 8c asst'd cans, 11c	
Blue, Prussian, fair to best	@ 55c
" " in oil	@
Blue Chinese dry	8 @
" Ultramarine	18 @ 20c
Brown, Spanish	14c
" Van Dyke	12@12c
Carmine, 40	combination price
Green, Chrome	18 @ 23c
" " in oil	14 @ 18 @ 24c
" Paris good 25c; best, 30c	
" " in oil " 30c; " 45c	
Iron Paint, Bright Red	₩ ℔ 25c
" Red	₩ ℔ 2c
" Brown	₩ ℔ 15c
" Purple	₩ ℔
" Ground in Oil, Bright Red	₩ ℔ 55c
" " " Red	₩ ℔ 5c
" " " Brown	₩ ℔ 45c
" " " Purple	₩ ℔ 6c
Mineral Paints	1¼ @ 4c
Orange Mineral	10c
Red Lead, American	7½c
" English	9½c gold
" Venetian (N. C.) dry	$1.65 @ $1.70
" " in oil asst'd cans, 11c; kegs, 8c	
" Indian dry	9 @ 12c
Rose Pink	10 @ 13c
Sienna, American, Raw	4c
" Burnt	4½c
" " in oil	10 @ 16 @ 20c
" Raw	11 @ 15 @ 25c
Umber, Burnt	4 @ 8c
" " in oil	9 @ 12 @ 16c
" Raw	3½ @ 7½c
" " in oil	10 @ 16 @ 18c
Vermillion, Chinese	90c
" English	50 @ 62½c
" Trieste	1.10c
" American, Common	15c
White Lead, American, pure dry	6 to 7c
" " in oil	8½ to 9c
White, Paris, English, prime in bbls. 2 @ 2½c	
Yellow Ochre, French	$1.75
" in oil asst'd cans, 11c; kegs, 8c	
" Vermont in casks, 1½c	
Yellow Chrome	17 @ 27c
" in oil	14 @ 18 @ 25c
Zinc White, American No. 1, dry	
" " No. 1, in oil	9c
" French (Paris)	8 @ 10c
" in oil	@ 10c

Oils.

Linseed, Raw, in casks and bbls.	₩ gal. 85c & 86c
" Boiled. " " "	" 90c & 91c
Bleached Whale	₩ gal. 68c
" Sperm	₩ gal. 1.15
" Elephant	80c
Signal	55c
Prime Lard	65c
No.1	60c
West Virginia	18 @ 24c
Drilling	40c
Empire Cylinder	60c
Miners' Oil	35 to 40c
Fish Oil, pressed	40c
Neatsfoot	85c
Tallow	70c
Machinery	40c
Engine	30c

Sundries.

Asphaltum	9c
Benzine	₩ gal. 16c
Chalk	5c
" Block	8c
Dryer, Patent, Am'n asst cans, 10½c; keg, 9c	
Frostings	50c
Glue, White	33 @ 42c
" Sheet	25c
Glaziers' Points, Zinc	8
Gum, Copal	25c
" Damar	25c
" Shellac, English	18c
" " dark	42c
Litharge, English	9c @ 9c
Mineral Wool	₩ ℔ 1¼ @ 1¾c
Pumice Stone, selected Lumps	4 @ 5c
" powdered	2½c
Putty, in bladders	3 c
" in bulk	2½c
Rotten Stone, soft, English	7c
Spirits Turpentine	42c
Whiting Spanish	2½c

Glass.

FRENCH WINDOW GLASS.

Prices current per box of 50 feet.

Single Thick.—Discount 40 & 10 %

SIZES.	1st.	2d.	3d.	4 th
6 x 8 to 10 x 15	$ 8.00	$ 6.75	$ 6.25	$ 5.75
11 x 14 to 16 x 24	8.75	8.00	7.50	7.00
18 x 22 to 20 x 30	11.25	10.50	9.75	8.75
15 x 36 to 24 x 30	12.75	11.50	10.00	
26 x 28 to 24 x 36	13.50	12.25	11.25	
26 x 36 to 26 x 44	14.75	13.75	11.75	
26 x 46 to 30 x 50	16.25	15.00	13.00	
30 x 52 to 30 x 54	17.25	16.00	13.50	
30 x 56 to 34 x 56	18.75	16.75	15.00	
34 x 58 to 34 x 60	19.50	18.00	16 00	
36 x 60 to 40 x 60	21.00	19.50	18.00	

Double Thick.—Discount 60 %

SIZES.	1st.	2d.	3d.	¼ th.
6 x 8 to 10 x 15	$12.00	$11.00	$10.00	$ 9.25
11 x 14 to 16 x 24	14.75	13.75	12.75	11.75
18 x 22 to 20 x 30	19.00	17.75	16.00	
15 x 36 to 24 x 30	21.50	19.25	18.50	
26 x 28 to 24 x 36	23.00	20.75	18.25	
26 x 36 to 26 x 44	24.00	23.00	19.25	
26 x 46 to 30 x 50	27.00	25.00	21.25	
30 x 52 to 30 x 54	28.50	26.00	22.25	
30 x 56 to 34 x 56	30.00	27.75	24.75	
34 x 58 to 34 x 60	31.75	30.00	27.00	
36 x 60 to 40 x 60	35.00	32.50	30.24	

Sizes above 40 x 60—$10.00 per box extra for every five inches.
An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes above 52 inches in length, and not making more than 81 united inches will be charged in the 84 united inches bracket

WHEELBARROWS.

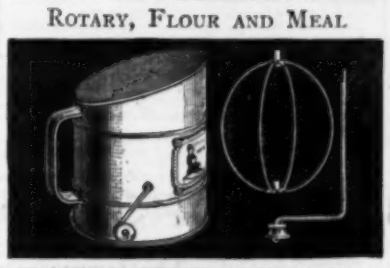
THE "A B C BOLTED"

will outlast five ordinary barrows. $24 per doz.

A. B. COHU, 197 Water St., New York.

THE AVALANCHE

ROTARY, FLOUR AND MEAL



SIFTER

Scoop, Measure, Mixer, Weigher, Egg Beater, Rice Washer; Tomato, Starch, Wine and Fruit Strainer.

Guaranteed the very best, and the cheapest to the jobbing trade. It commends itself wherever shown. WRITE FOR PRICES.

N. DUBRUL & CO., 441 & 443 Plum St. CINCINNATI, O.
Lantern and Sieve Manuf'rs.
SMITH BROS. & CO., Agents, 73 Fulton st., N. Y.

Gunpowder.

GUNPOWDER.

DUPONT'S

Rifle, Sporting and Blasting Powder

The most popular Powder in use.

Dupont's Gunpowder Mills, established in **1801,** have maintained their great reputation for 78 years. Manufacture the following celebrated brands of Powder:

DUPONT'S DIAMOND GRAIN,

Nos. 1 (coarse) to 4 (fine), unequaled in strength, quickness and cleanliness; adapted for Glass Ball and Pigeon Shooting.

DUPONT'S EAGLE DUCKING,

Nos. 1 (coarse) to 3 (fine), burning slowly, strong and clean; great penetration; adapted for Glass Ball, Pigeon, Duck and other shooting.

DUPONT'S EAGLE RIFLE,

A quick, strong, clean Powder of very fine grain for Pistol shooting.

DUPONT'S RIFLE, Fg, "Sea Shooting," FFg and FFFg.—The Fg for long range rifle shooting, the FFg and FFFg for general use, burning strong and moist.

Also all kinds of Sporting, Mining, Shipping and Blasting Powders of all sizes and descriptions. Special grades for **export.** Also, Musket, Cannon, Mortar and Mammoth Powder, U. S. Government standard. Powder manufactured to order of any required grain or proof. Agencies in all cities and principal towns throughout the U. S. Represented by

F. L. KNEELAND, 70 Wall St., N. Y.

N. B.—Use *none* but **Dupont's Fg** or **FFg** Powder for long-range Rifle shooting.

GUN POWDER.

Laflin & Rand Powder Co.

No. 29 Murray Street, New York,

Manufacture and sell the following celebrated brands of Sporting Powder known everywhere as

ORANGE LIGHTNING,
ORANGE DUCKING,
ORANGE RIFLE

more popular than any Powder now in use.

Blasting Powder and Electrical Blasting Apparatus.

Military Powder on hand and made to order.

SAFETY FUSE, FRICTIONAL & PLATINUM FUSES.

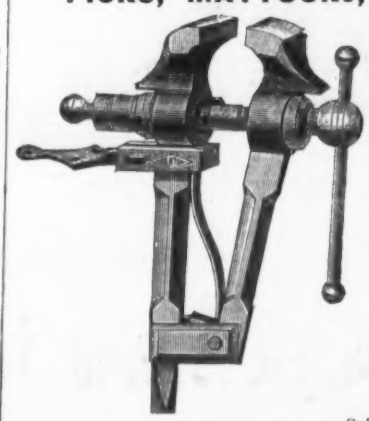
Pamphlets showing sizes of grain sent free.

HERMANN BOKER & CO.,

101 and 103 Duane Street, New York,

PROPRIETORS OF TRENTON TRADE MARK VISE & TOOL WORKS

PICKS, MATTOCKS, GRUB HOES, HAMMERS.



WROUGHT IRON STEEL FACE
(P. W. PATTERN.)
"FULLY WARRANTED."



Sole Agents for

H. Boker & Co.'s Celebrated "Tree" Brand Cutlery.
R. Heinisch's Sons Unrivalled Shears, Trimmers, Scissors, Japanned and Nickled.
Ward & Payne's Sheep Shears. Peugeot Brothers' Horse Clippers.

J. W. GARDNER'S

Unequaled and "Warranted Superior to All"

Pocket Knives and Barlows.

Also a full stock of

Geo. Wostenholm & Sons', W. & S. Butcher's,

Manhattan and O. K.

POCKET CUTLERY & RAZORS.



LAMSON & GOODNOW MFG.

TABLE CUTLERY,

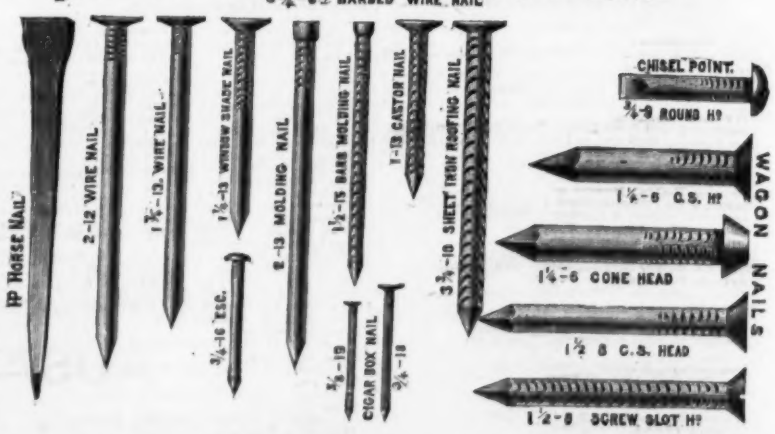
Guns and Pistols

FISHING TACKLE,

Arms and Ammunition.



3¼-6 BARBED WIRE NAIL



HORSE SHOE & WIRE NAILS

Steel, Iron and Brass Nails and Barbed Nails

Of every kind.

Roofing and Moulding Nails, Escutcheon Pins, Chair and Caster Nails, Cigar Box and Window Shade Nails, Wagon and Boat Nails.

Manufactured by

THE HP NAIL COMPANY,

Cleveland, Ohio.

HALL'S PATENT

DOUBLE COMPOUND LEVER CUTTING NIPPERS.

NEAT, HANDY, POWERFUL AND DURABLE.



Of the many Cutting Nippers heretofore placed on the market, not one has supplied either of the two great needs long felt by all who use them, viz.: 1st. Increased power without a clumsy and expensive increase of size. 2d. That the construction of the Nipper should be such that any damage to the cutting jaw or handle, from wear or accident, could be repaired.

The HALL NIPPER meets these requirements fully, being constructed as shown in the cut, and made perfectly interchangeable in all its parts; a jaw, handle, or any other part, can be readily removed and replaced without trouble at a very trifling cost.

These Nippers are made entirely of the very finest quality of steel, made expressly for them, the different parts being drop-forged by the Colt's Fire Arms Co., of Hartford, Conn., which is a sufficient guarantee of the excellence of the work.

This Nipper gives greater cutting power than any Nipper ever made. The accidental fracture of any part does not render the tool worthless, as it can be obtained at the cost of a few cents, and replaced without trouble, every part being perfectly interhangeable. Every pair warranted.

Manufactured by **THE INTERCHANGEABLE TOOL COMPANY,** of New York.
Manufacturers of Special Tools and Machines on the Interchangeable System.

All orders should be addressed to

PETER A. FRASSE & CO. Sole Agents, 95 Fulton Street, New York.

BOUDREN'S PATENT ADJUSTABLE DASH LAMP.

REMODELED AND GREATLY IMPROVED.

Perfection Attained.

Flame Regulated FROM THE OUTSIDE.



PRICES REDUCED.

GUARANTEED To Burn Brilliantly OVER THE ROUGHEST ROADS.

SPLENDID Barn Lantern.

Fits any shaped Dash or on any vehicle. Send for circular just issued. Address

WHITE MANUFACTURING CO.,

Manufacturers of all kinds of Carriage and Hearse Lamps and Mountings.

BRIDGEPORT, CONN.

HENRY DISSTON & SONS

KEYSTONE SAW, TOOL, STEEL and FILE WORKS,

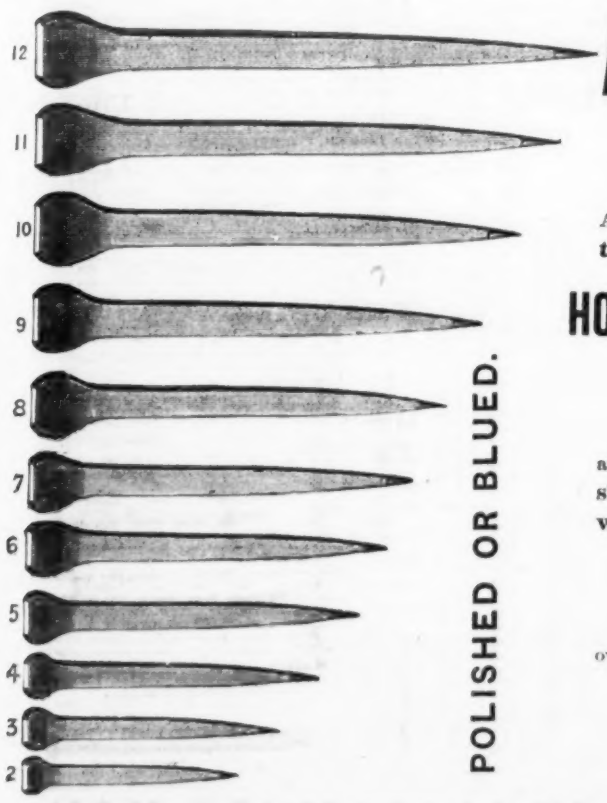
Front and Laurel Streets, Philadelphia,

MANUFACTURERS OF

SAWS OF ALL KINDS, FILES AND TOOLS, AND SPECIAL GOODS MADE FROM SHEET STEEL

All goods stamped Henry Disston & Sons, and bearing our trade mark, are fully warranted.

Branch Works, Tacony, Philadelphia. **Branch House, Randolph & Market Streets, Chicago, Ill.**



AUSABLE HORSE NAILS,

Twisted, Bent and Drawn COLD.

Hot Forged and Cold Hammered Pointed,

Are the **only Nails in market** that are made in imitation of the **Hand Process.** They have **the uniformity of Machine** Nails and the **toughness** of those hammered by hand Our

HOT FORGED AND COLD HAMMERED POINTED NAILS

Are the Standard Nails,

and are **acknowledged to be the best in the market.** They are used by the **best shoers** in **New York, Brooklyn, Philadelphia, Chicago, Saint Louis, Milwaukee, Baltimore,** &c., and

GENERALLY THROUGHOUT THE UNITED STATES.

They also compete successfully in Foreign Countries with machine and hand-made Nails of their own manufacture.

AUSABLE HORSE NAIL CO.,

4 Warren St., New York.





WM. H. HASKELL & CO.,

Pawtucket, R. I.

MANUFACTURERS OF



COACH SCREWS

(With Gimlet Points),

ALL KINDS OF

Machine and Plow Bolts,

FORGED SET SCREWS,

AND

TAP BOLTS.

HENRY B. NEWHALL 11 WARREN ST. N NEW YORK AGENT



Bemis & Call Hardware & Tool Co.

This Wrench can be furnished with Briggs' Pat. Nut or Sleeve.

PATENT COMBINATION WRENCH.

These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, case-hardened throughout, and not only combine all of the superior qualities of our Cylinder or Gas Pipe Wrenches, but also all requisite Combinations of a regular Nut Wrench, thus making a combination which has no equal

For Circulars and Price List, address

BEMIS & CALL HARDWARE & TOOL CO., Springfield, Mass.

Iron and Brass Wood Screws.

TRADE MARK BEST CHAR IRON COAL WOOD SCREWS

We manufacture a full line of

IRON AND BRASS SCREWS.

Quality, finish and tests as to strength, guaranteed equal to any in the market.

With improved facilities and largely increased capacity for production, we can fill orders promptly, and invite inquiries for discounts.

Philadelphia Screw Co., Limited,

Twelfth and Buttonwood Streets,

PHILADELPHIA.

HOLIDAY GOODS.



Small boxes of excellent Tools, all warranted.

Price, in sets, from $1 to $3, in Pasteboard, Chestnut and Black Walnut Boxes.

ALSO,

AMATEURS' CARVING TOOLS.

No. 5, $4.50 per doz.



No. 3, $4.80 per doz.



Of the best quality. All handled and ground sharp. Put up in sets of 3, 4, 6, 8, 10 and 12 tools. These tools are all made by hand, and are forged from the best quality cast steel, and every tool is stamped with our name.

BUCK BROTHERS,

RIVERLIN WORKS. - - - Millbury, Mass.



Penfield Block Works,

LOCKPORT, N. Y.,

Wrought Iron and Wood Shell

TACKLE BLOCKS.

All Steel Roller Bushings, and Roller Bushed Iron Sheaves.

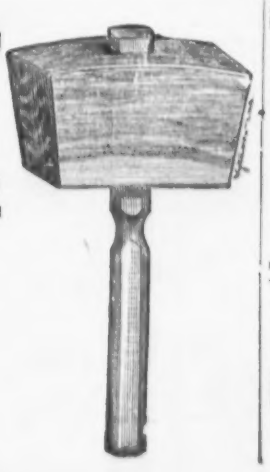
CARPENTER MALLETS

Of every description.

Giant Car Pusher and Faucets.

HENRY B. NEWHALL 11 WARREN ST. N NEW YORK AGENT

Send for Catalogue.



Bergen Port Spelter

MINES: Lehigh Valley, Pa. WORKS & FURNACES Bergen Port, N. J.

The only Miners and Manufacturers of

PURE LEHIGH SPELTER

From Lehigh Ore.

Especially adapted for

Cartridge Metal and German Silver.

Also manufacturers of

BERGEN PORT OXIDE ZINC.

Superior for LIQUID PAINT on account of its body and wearing properties.

F. OSGOOD & CO., Proprietors.

E. A. FISHER, Agent, 13 Burling Slip, N. Y.

A. B. GUNNISON,

MANUFACTURER OF

WOOD PUMPS



ERIE, PA.

ESTABLISHED, - 1856

Warranted Genuine

Cucumber Pumps & Pipe. Also Pop Pumps, Lined Pumps, &c.

The Trade Supplied by

H. B. GRIFFING, 60 Cortland St., N. Y.

P. MANN, Washington, D. C.

SCOBIE, HARRISON & PARKER, 125 Liberty Street, Pittsburgh, Pa.

KNECHT & THOMAS, Winchester, Ind

—AND BY—

A. B. GUNNISON

Manufacturer, ERIE, PA.



THE "EDDY" STRAIGHTWAY

VALVES.

ALSO,

FIRE HYDRANTS.

Axe, Hatchet, Powder and Brush Machinery.

MOHAWK & HUDSON MFG. CO.

WATERFORD, N. Y.

BENTON, FAULKNER & BIRD, 16 New Church street, New York Agents.



GEO. M. EDDY & CO.,

Manufacturers of

Measuring Tapes

Of Cotton, Linen & Steel.

FOR ALL PURPOSES.

351 to 353 Classon Ave. Brooklyn, N. Y.

New York Wholesale Prices, December 3, 1879.

HARDWARE.

Anvils.
Eagle Anvils (American) ₱ ℔ 9c dis 20 %
Wright's ₱ ℔ 10½c over 250, ℔s 11c
Armitage's Mouse Hole 9½ @ 9¾c
Trenton 10½c

Augers and Bits.
Conn. Valley Mfg. Co. } dis 40&10 %
Douglass Mf. Co. }
Humphreysville Mfg. Co }
Ives }
Beecher (French, Swift & Co) }
Griswold }
Nobles Mfg. Co }
Fasson's Patent }
Cook's, Douglass Mfg. Co dis 50 %
Cook's, Ives' dis 50 %
Snell Mfg. Co.'s C. S. Augers dis 40 %
" " B. Machine dis 40 %
" " C. S. Bits dis 40 %
" " Jennine's Bits dis 35 %
Patent Solid Head dis 30 %
Russell Jennings' Auger Dowel, Machine-Dowel and Hand-Rail Bits dis 10&10&10 %
Russell Jennings' Augers, dis 15%&10&10&10 %
Russell Jennings' Car and Machine Bits, Boring-Machine and Millwrights' Augers dis 25&10&10&10 %
Imitation Jenning's Bits dis 40&45 %
Ives' "Jennings" Bits dis 33⅓&10 %
Lewis' Single Twist Bits' dis 40 %
Andrews Bits dis 50 %
Expansive Bits, Clark's, small, $18; l'ge, $26 dis 40 %
" Ives $20 @ $30—dis 33⅓ %
" " Blake's $30—dis 40 %
" " Parmelee's $30 and $70 dis 33⅓ %
Hollow Augers Ives' } dis 30 %
" " French Swift & Co. }
" " Douglas dis 30 %
" " Bonnev's Adjust ₱ doz $48—dis 40 %
" " Stearns' Adjust., ₱ doz $48—dis 25&10 %
" " Ives' Expansive each $4.50—dis 30 %
" " Univ'sal Expansive, each $4.50—dis 10 %
Gimlet Bits $7.50 ₱ gross, dis 45 %
" Diamond ₱ doz $1.00 dis 20&10 %
" "Bee" dis 45&10 %
Double Cut Gimlet Pits Shepardson's dis 40 %
" " Ct. Valley Mfg. Co. dis 30&10 %
" " Hartwell's dis 60&10 %
" " Douglass' dis 40 %
" " Ives' dis 40 %
Morse sBit Stock Drill, List of May 15, 78 dis 25 %
L'Hommedieu's Ship Augers dis 15 %
Watrous Ship Augers dis 15 %

Awl Hafts.
Sewing, Brass Ferrule $3.50 ₱ gross—dis 40&10 %
Peg " 3.50 " dis 40&10 %
Patent Sewing, Short $1.00 ₱ doz—dis 40&10 %
" " Long $1.40 ₱ doz—dis 40&10 %
" Peg Plain Top $10.00 ₱ gross—dis 40&10 %
" " Leather Top 12.00 " dis 40&10 %

Awls, Brad Sets, &c.
Awls Sewing, Common ₱ gross $1.35—dis 25 %
" Sewing, Best ₱ gross 1.40—dis 10 %
" Shouldered Peg ₱ gross 2.25—dis 15 %
" Patent Peg ₱ gross .60—dis 15 %
" Shouldered Brad ₱ gross $2.70—dis 25&10 %
" Handled Brad $7.00 ₱ gross—dis 25&10 %
" Handled Scratch $7.00 ₱ gross—dis 25&10 %
" Socket Scratch $1.00@$1.25 ₱ doz—net
Brad Sets, Aiken's ₱ doz $12.00—dis 45&10 %
No. 42, $10.50; No. 43, $12.50 dis 60&10 %
" Stanley's Excelsior, No. 1, $9.50 dis 25&10 %
" " No. 2, 4.80 dis 25&10%
" " No. 3, 7.80 dis 25&10%

Axes.

	Light.	Med.	Heavy.
H. H. Jones & Co	$8 00	$9.00	₱ doz net.
Floods	14.00	14.50	15.00 dis 35 %

Axles.
Common (Guy C. Hotchkiss, Field & Co.) ₱ ℔ 3½c
old Collar, Case Hardened, Chilled Box ₱ ℔ 8c

Axle Grease.—Frazer's ₱ ℔ 6c

Balances.
All Spring Balances dis 20&10 %

Bells.
Hand, Light Brass dis. 70 %
" Extra Heavy dis 45 %
" White Metal dis 60&5&10 %
" Silver Chime dis 20&10 %
" Globe (Cone's Patent) dis 20&10 %
Gong, Abbe's dis 20&10 %
" Yankee dis 30&10 %
" Barton's dis 30&10 %
Crank Taylor's dis 25&10 %
" Brook's dis 50&10&2 %
" Cone's dis 10 %
" Connel's dis 50&10 %
Lever, Sargent's, new list Dec., '78 dis 60&10 %
" Taylor's Bronze or Plated Lever dis 25&10 %
" " Japanned Lever dis 50&10&2 %
" R. & E. M. Co.'s dis 50&10&2 %
Call, Brook's dis 5&10&2 %
" Western dis 25&10 %
Call dis 25 %
Cow, Common Wrought dis 20&10 %
" Western dis 20&10 %
" Sargent's new list dis 5&10 %
" Kentucky "Star" dis 20&10 %
" Sargent's new list dis 5&10 %
" Hodge's Genuine Kentucky, new list—

Nos.	0	1	1½	2	3	4	5	6	Hog	dis
	$12.00	10.00	9.00	8.00	6.00	5.00	3.50	2.50	5.00,	

" Yaw's Genuine dis
" Texas dis 50&10
" Wilson's (Moore's) dis

Bellows.
Blacksmiths', Common dis 45 %
" Extra and Pittsburgh Pattern dis 20 %
Moulders dis 25 %
Hand Bellows dis 25 %

Belting, Rubber.
N. Y. Belting and Packing Co. new list net

Bit Holders.
Extension, Barber's ₱ doz $15.00—dis 40&5 %
" Ives' ₱ doz $15.00—dis 45 %
Diagonal ₱ doz $24.00—dis 40 %
Angular ₱ doz $24.00—dis 40 %

Blind Adjusters.—Domestic ₱ doz $3.00, dis 20 %

Blind Fasteners.—Mackrell's dis 30 %
Fish Sand's No. 2000, per gross $9.00 net
" old pattern ₱ gross $9.00 net
Washburn's Patent ₱ gross $9.00 net
Merriman's new list net
Mackrell's ₱ doz. pairs, $1..65, dis. 10 %

Blind Staples.
Barbed, ½ in. and larger ₱ ℔ 13½c net
" ¾ in. ₱ ℔ 18c net

Blocks.—Burr & Co. dis 25&10 %
Differential Pulley Blocks dis 20 %
Penfield Block Works, Rope and Iron Strap'd. dis 40 %
" " " Wrot. Iron Com. bushed dis 25 %
" " " " " all steel roll'r. dis 10 %
" " Sheaves " " dis 35 %
Manley R. & L. Co., Rope and Iron Strap'd. dis 35&10 %

Bolts.
Cast Iron Barrel, Shutter, &c. dis 50&10 %
Cast Iron Chain, Sargent's list dis 60&10 %
Bush's Lever and Chain Bolts dis 40 %
Wrought Barrel dis 5&10 %
" Square dis 40&10 %
" Shutter, all Iron, Stanley's list dis 50 %
" " Brass Knob, " " dis 20&10 %
" " Sargent's list dis 60&10 %
" Sunk Flush, Sargent's dis 60&10 %
" " Stanley's dis 30 %
B.K. Flush, Com'n, Stanley's dis 45 %
" Ex. Heavy, " " dis 40 %
" Plated Knob & Slide Flush " dis 40&10 %
Carriage and Tire, Common dis 70&5 %
" " Philadelphia, new list. dis 60@65 %
" " Philada. Pattern dis 65&5 %
" Shelton's (old list) dis 65 %
R. B. & Carria (old list) dis 65&5 %
Tire, Am. Screw Co.'s, Phila, new list, Nov 1, '79, dis 65 %
" " Bay State dis 80 %
" R. B. & W. dis 70 %
Stove—American Screw Co.'s dis 40 %
" R. B. & W. dis %
Plow dis 50 %
" R. B. & W. dis 50 %
Machine, List of July 15, '79 dis 55 %
Bolt Ends " dis 55 %

Borax 10½@11½c ₱ ℔ net

Boring Machines.

	Upright.	Anguiar.	
First quality, no Augers	$5.00	$6.75	dis 40 %
" with Augers	8.40	10.25	dis 40 %
Snell's, no Augers	2.75	3.50	net.
Phillips' with Augers		12.00	dis 40 %

Braces.—Barber's Patent dis 40&5 %
D. S. Backus dis 50&10 %
Wilson Mfg. Co. dis 10 %
Spofford's Patent. dis 40&10 %
Noble's Patent dis 40&5 %
Ives' Patent Braces dis 55@55&10 %
Common Ball (American) dis 50 %

Brackets.—Shelf (Sargent's) Fancy dis 55&10 %

Bright Wire Goods list of July 8, 1879 dis 30&10 %

Bull Rings.—Union Nut Co. dis 50&20 %
Sargent's dis 60&10 %
Notchkiss' low list dis 35 %
Humason Beckley & Co.'s (low list) dis 60 %

Butts.
Wrought Brass dis 45 %
Cast Brass, Tiebout's dis 40 %
" Corbin's dis 50&10 %

COMMON CAST, NOT DRILLED.

Fast Joint, Narrow dis 40&10 %
" Broad dis 40&10&10 %
Loose Joint, Narrow and Broad dis 50&10 %

DRILLED AND WIRED.

Fast Joint, Narrow dis 40&10 %
" Broad dis 40&10&10 %
Loose Joint dis 50&10 %
" Japanned dis 50&10 %
" with Acorns dis 55&10 %
Parliament Butts dis 50&10 %
Bayer & Hinges dis 55&10 %
Loose Pin no Acorn dis 50&10 %
" Acorns dis 50&10 %
" Japanned dis 55&10 %
" Plated Tips dis 55&10 %

WROUGHT IRON.

Fast Joint Narrow dis 55 %
" Lt. Narrow dis 60 %
" Broad dis 55 %
Loose Joint, Broad dis 60 %
Table Butts, Back Flaps, &c dis 55 %
Inside Blind, Regular dis 55 %
" Light dis 60 %
Loose Pin, Wrt dis 60 %

Spring Hinges.
American Spiral Spring Butt Co., Jap'd dis 25 %
" " " " Fancy dis 20 %
Gem Spiral Spring Butts, Japanned dis 25 %
" " " " Ornamental dis 20 %
Geer's Single and Double Acting dis 25 %
Sabin Mfg. Co.'s Double Acting dis 35 %
Union Spiral Spring, Japanned dis 25 %
" " Ornamental dis 20 %
Union Spring Hinge Co.'s dis 25 %
American Spring Hinge Co.'s dis 25 %
Union Mfg. Co. dis 25 %
Bommer's dis 25 %
Blind Butts, Parker dis 50&10 %
" Palmer dis 37½&10 %
" Seymour dis 50&10 %
" Shepard's "Double Locking" Nos. 1 & 2 dis 50&10 %
" Lull & Porter dis 66⅔&10 %
" Nicholson dis 40&10 %
" Huffer dis 40&10 %
" Clark's, Nos. 1, 2, 3, 4, and 45 dis 50&10 %
" Shepard's "Noiseless," Nos. 60 & 65 dis 50&10 %
" Sargent's No. 12 dis 70&10 %

Bow Pins.
Notchkiss' low list dis 10 %
Humason, Beckley & Co.'s (low list) dis 60&10 %
Sargent & Co's $19.70 and $21.40. dis 60&10 %

Butchers' Cleavers.
Humason & Beckley Mfg. Co. dis 25 %
Bradley's dis 25 %
Beatty's dis 25&5 %

2	3	4	5	6	7	8
$16.50	19.00	21.40	24.00	27.00	30.00	33.50	36.50

Can Openers.
Messenger's Comet ₱ doz $1.00. dis 25 %
American ₱ doz $2.00. dis 75 %
Duplex ₱ doz 24c. dis 15@20 %
Lyman's ₱ doz $5.75. dis 20 %
Poole ₱ doz $2.75. dis 40 %
No 4. French ₱ doz $2.25. dis 60 %
No. 5, Iron Handle ₱ gross $6.00 net
Eureka ₱ doz $2.40, dis 10 %
Sardine Scissors ₱ doz $7.00, dis 55 %
Star ₱ doz $4.00, dis 25 %
Sprague dis 50&10 %

Caps—Percussion. ₱ 1000.
U. M. C., F. C. trimmed .60c } dis 10
" " F. L. ground .70c } 5 %

G. D. & S. B. .33c
Double Waterproof, in 1-10's $1.20
Colt's Pistol, " .95c
Musket, 1-10 " .60c
F. L. .60c } dis 10&
E. B. 1-10, Trimmed .65c } 5 %
E. B. 1-10 Ground Edge .70c }

Cartridges.—Metallic dis 60&10&5 %

Cards.—Horse and Curry dis 33⅓&10 %
Cotton dis 25&10 %
Wool dis 25&10 %

Car Pusher.—"Giant" $6.25 each, dis 20 %

Carpet Stretchers.
Cast Steel, Polished ₱ doz $5.00, dis 30 %
Iron Steel Points ₱ doz $2.00, dis 55 %

Casters.
Bed dis 30&10 %
Plate and Shallow Socket dis 5&10 %
Deep Socket dis 20&10 %

Cattle Leaders.
Hotchkiss' Sons' dis 10&10 %
Humason, Beckley & Co.'s (low list) dis 60&10 %
Sargent's dis 60&10 %

Chain.
Trace, ⅝-1-2 ₱ pair 79c }
⅝-10-2 ₱ pair 79c } dis 25 %
" 7-10-2 ₱ pair 89c }
German Halter Chain, New list Oct. 22, '79 dis 40&45 %
" Coil. New list Oct. 22, '79 dis 40&45 %
Covert Halter, Hitching and Breast dis 35 %
Oneida Halter Chain dis 40 %
Galvanized Pump Chain ₱ ℔ 9c net
Jack Chain, Iron dis 60 %
" Brass dis 50 %

Chalk.
White ₱ gross 55c net
Red ₱ gross 75c net
Blue ₱ gross 90c net
White Crayons each ₱ gross 140 net

Chisels.
Socket Framing, Crossman dis 65&10 %
" " Buck Bros. new list. dis 25 %
" " Merrill dis 70 %
" " Witherby Tool Co. dis 70 %
" " Douglass' dis 65&5 %
" Firmers, Crossman dis 65&10 %
" " Buck Bros. new list. dis 25 %
" " Merrill dis 70 %
" " Witherby Tool Co. dis 70 %
" " Douglass' dis 65&5 %
" Corner dis 65 %
Tanged Firmers extra dis 33⅓@40 %
" " Butcher's $5.00 @ $6.25 to £
" " Spear & Jackson's 5.00 to £
" " Buck Bros (Shank) 5.00 to £

Clamps.
Iron, Providence Tool Co.'s, Wrt. Iron dis 25 %
" Adjustable, Gray's dis 20 %
" " Lambert's dis 20 %
" " Snow's dis 40&5 %
" " Hammer's dis 15 %
" " Stearns' dis 15&10 %
" Cabinet, Sargent's dis 66⅔&10 %
" Carriage Makers', Sargent's dis 60&10 %
" Cord and Tape (T. & S. Mfg. Co.) dis 30 %

Clips, Axle.
Norway or Best dis 60&10%
Superior dis 6 & 10 %
Cockeyes....⅛ in., 26c.; ⅛ inch, 23c.; ⅛ in., 27c., net

Cocks, Brass.
Racking dis 35 %
Globe dis 35 %
Plain Bibbs dis 35 %
Ale and Beer dis 50 %

Coffee Mills.
Board and Box dis 10 %
Increase Wilson's net
Selsor's Pat. $0.50, $10.50, dis 25 %
American (Enterprise Mfg. Co.) dis 20 %
French Steel dis 20 %
The Swift (Lane Bros.) dis 25 %

Combined Dinner Pail and Lantern.
Per doz $14.00 dis 30 %

Compasses, Dividers, &c.
Compasses dis 50&10 %
Callipers dis 50&10 %
Dividers dis 50&10 %
Bemis & Call Co.'s Dividers dis 50&20 %
" " Compasses & Callipers dis 55 %
" " Wing & Inside or Outside dis 50&5 %
" " Double dis 60 %
" " Call's Pat. Inside dis 35&10 %
Cook's dis 25 %
Excelsior dis 50 %
Miller's Patent dis 25 %

Coopers' Tools.
Bradley's dis 15 @ 20 %

Corkscrews.—Humason & B. dis 33⅓ %

Corn Knives and Cutters.—Bradley's dis 10 %
Wadsworth's dis 33⅓ %

Crow Bars.
Cast Steel ₱ ℔ 7 c
Iron, Steel Points ₱ ℔ 5½c

Curling Irons, &c.
⅛, ⅜, ½ in., $1.80 2.00, 2.40 dis 10 %
Curling Tongs ₱ doz $3.60, dis 10 %
Pinching Irons ₱ doz 7.50, dis 20 %

Curry Combs.
Fitch's (List of No. 240. $1) dis 40 %
Houchkiss' Noverty dis 20 %
Lawrence dis 40 %
Lawrence, with detachable Mane Comb dis 33⅓ %
Rubber ₱ doz $0.00, dis 20&10 %

Curtain Pins.—Silvered Glass dis 15 %
White Enamel dis 15 %

Cutlery.
Meriden Cutlery Co. (Table) net
Am. Miller Bro.'s Cutlery Co. dis 25 %
Humason & Beckley, Pocket dis 30 %
F. W. Rogers & Son, A. A. dis 40&5&2 %
Naugatuck Cutlery Co. list net
Aaron Burkinshaw's Pocket dis 25 %

Dog Collars.
Embossed Gilt dis 20 %
Leather dis 30 %
Brass dis 25 %

Door Springs.
Torrey's Rod ₱ doz $2.40 net
Gray's " ₱ doz $1.75, net
Bee Rod ₱ doz $1.75, net
Gem (Coil)—
No. 1, Large, Japanned ₱ doz $3.50 }
No. 3, Medium, " doz 2.50 } dis 10 %
No. 4, Small, " doz 2.00 }
Challenge (Coil)— Nos. 6 7 8
Japanned ₱ doz $2.00 2.50 3.50 }
Coppered ₱ doz 4.00 4.50 5.00 }
Galvanized ₱ doz 3.50 4.00 4.50 } dis 30 %
Nickeled ₱ doz 5.50 6.00 7.00 }
Premium (Coil)— Nos. 1 2 3
Japanned ₱ doz $7.40 6.25 5.00 } dis 30 %
Nickeled ₱ doz 11.00 9.50 8.00 }
Star (Coil)—For Cop'd, Nickel-Plated, &c. see list.
No. 4, ("Snoo Fly") screen door size ₱ doz $1.75 }
No. 5, Screen Door size ₱ doz $2.00 } dis 25 %
No. 6, Medium ₱ doz 2.50 }
No. 7, Large. ₱ doz 3.50 }
Sabin's Lever, No. 1, $1; 2, $1.50; 3, $2; 4, $2.50; dis 35 %
Sabin's Boss, No. 1, $4.40; 2, $4.20; 3, $3.60. dis 40&10 %
Sabin's Crown, ₱ doz $2.75, dis 40&10 %
Philadelphia 5 in., $5.00; 8 in., $7.00, dis 35 %
Barker's Concealed dis 20 %
Cowell's No. 1, $18.00; No. 2, $15.00 ₱ doz. dis 40 %
Rubber, complete ₱ doz $1.50, net

Drawing Knives.
Crossman's No. 1 dis 65&10 %
Merrill dis 70 %
Nobles Mfg. Co dis 15 %
Bradley's dis 35 %
Adjustable Handle dis 20 %
Witherby Tool Co. dis 70 %
Douglass dis 65&5 %

Drills and Drill Stocks.
Blacksmiths' each $2.25 net
Blacksmiths' Self Feeding each $7.50. dis 20 %
Breast, P. S & W. dis 30 %
" Hotchkiss dis 30 %
Breast, Wilson's dis 20 %
" Miller's Falls each $2.50. dis 25 %
" Bartholomew's each, $2.50 dis 25&10 %
Ratchet, Merrill's dis 20 %
" Ingersoll's dis 25 %
" Whitney's dis 25 %
" Weston's dis 20 %
" Moore's Triple Action dis 20 @ 25 %
Whitney's Hand Drill dis 40 %
Wilson's Drill Stocks dis 10 %
Automatic Boring Tools each $2.75. dis 30 %

Drill Chucks.—Morse's Beach Patent dis 30 %
" Adjust. each $10.00, dis 30 %
Danbury $8.00, dis 30 %

Egg Beaters.
Dover ₱ gross, $42.00; doz $4.00 net
National ₱ do dis 33⅓ %
Family per gross $33; per doz., $3.00 net

Elevator Buckets.
Mill E. Buckets, light, 3½ to 10 in. (Duc's Improved) ₱ 100 $15.00 @ $54.00, net
Mill E. Buckets, heavy, 5 to 10 inches (Duc's Improved) ₱ doz $4.60 @ $10.20, net
Storehouse, (Duc's Patent) 12 to 17, $12.00 @ $20.00 net

Emery and Emery Paper.
Genuine Chester—Regular Nos. ₱ ℔
" " Flour and FF ₱ ℔
" " in 10-lb. cans. 2c extra
Washington Mills—Regular Nos. ₱ ℔ 8c
" " Flour ₱ ℔ 9c
Wellington Mills, Grain ₱ ℔ 5c net
" " Flour ₱ ℔ 8c net
Hampden Emery Grain 5c net
" " Flour 3c net
B. & A. Emery Paper dis 20@25 %

Enameled and Tinned Ware.
Kettles dis 40 %
Sauce Pans dis 35&5 %
Tinned Sauce Pans dis 35&5 %

Escutcheon Pins.
Iron dis 25 %
Brass dis 40&5 %

Escutcheons.
Door Lock Same discounts as Door Locks
Brass Thread dis 60&10 %
Wood dis 25 %

Faucets.
Fenn's dis 40 %
Fenn's Cork Stops dis 35&5 %
Star dis 55&10 %
Frary's Patent Petroleum dis 20&10 %
Wood and Metallic dis 40 %
West's Patent Key dis 45 %
Metallic Key, Leatner Lined dis 40 %
Cork Lined dis 70&10 %
Enterprise (Self Measuring) ₱ doz, $36.00, dis 20 %

Felloe Plates ₱ ℔ 10c. dis 55

Files.
Auburn $4.00 to £, dis 35 %
Arcade $4.00 to £, dis 25 %
G. & H. Barnett dis 25&5
Nicholson (Nicholson List) dis 25 %
Heller & Bros. $4.00 to £ dis 20 %
Madden & Cockayne File Co. $4.00 to £, dis 25 %
J. & Riley Carr 4.50 to £
Johnson & Bro 4.50 to £
Butcher's 4.50 to £
Walter Spencer & Co.'s "Diamond" 4.50 to £
Fisher's 4.75 to £
Moss & Gamble 4.50 to £
H. Disston & Sons (new list) dis 25 %
Western (new list) dis 25 %
Limet & Co. (French) $4.25 to £
Lightning Files, 6, 8 and 10 in. dis 30&10 %

Fluting Machines.
Knox, 4-inch Rolls $3.25 each }
" 6 " " 4.00 " } dis 10 %
" 8 " " 6.50 " }
Peerless, 4-inch Rolls 4.00 each net
" 5 " 4.75 each net
Eagle, 3½-inch Roll $2.15, dis 10 %
" 5½ " $2.85, dis 10 %
Eureka, No. 1, 7-inch Roll 5.00 each, dis 10 %
" No. 2 6-inch Roll 4.00 each, dis 10 %
Crown, 4½-in. $3.50; 6-in., $4.00; 8-in., $6.50 each dis 10 %
Star 4½ in., $4.00; 6 in., $5.00 each dis 10 %
Crown Jewel 6 in., $3.40 each, dis 10 %
American, 5 in., $3; 6 in., $3.40; 7 in., $4.50 each, dis 10 %
Domestic Fluter 1.50 each net
Geneva Hand Fluter, No. 1 ₱ doz $15, dis 20 %
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00 ₱ doz dis 10 %
Shepard Hand Fluter No. 75 ₱ doz $15, dis 10 %
" " No. 80, $8.50; No. 100, $6 ₱ doz net
Clark's Hand Fluter ₱ doz $15.00, dis 20 %
Combined Fluter and Sad Iron ₱ doz 15.00, dis 30 %
Buffalo ₱ doz 10.00, dis 10 %

Fluting Scissors dis 45 %

Forks.
Hay, Manure and Spading new list, dis 15 %
Plated" A 1, Rogers & Bro. dis 40&5 %
" Reed & Barton dis 40&5 %

Fruit and Jelly Presses.
Enterprise Mfg. Co. dis 20 %

Fry Pans.
Burnished, list as follows dis 40 %

No.	0	1	2	3	4	5	6	7	8
₱ doz.	$3.00	$3.75	4.25	4.75	5.25	6.00	7.00	8.00	9.00

Acme Patent, same list as above dis 45 %

Gauges.
Marking, Stanley's dis 50&10 %
" Chapin's dis 50&10 %
Wire dis 10 %
" Smith's Patent ₱ doz $18.00, dis 40 %

Gimlets.
Nail and Spike dis 40 %
"Bee" Gimlets ₱ gross $12.00 dis 5&10 %
"Eureka" Gimlets dis 40 %
"Diamond" Gimlets dis 40 %
Double Cut Shepardson's dis 40 %
" " Hartwell's dis 50 %
" " Ives' dis 50 %
" " Douglass' dis 40%

Glue Pots.
Tinned and Enameled dis 35&5 %
Family, Howe's "Eureka" dis 40 %
" L. F. & C.'s "Handy dis 25 %

Grindstone Fixtures.
Sargent's Patent dis 60&10%
Reading Hardware Co. dis 25&10 %
" " "Keystone" dis 33⅓&10 %

Gun Wads.
U. M. C. B. E. 11 up $2.05 }
" " 9 & 10 2.30 }
" " 7 & 8 2.80 } dis 5&5 %
" P. E. 11 up 3.10 }
" " 9 & 11 4.00 }
" " 7 & 8 4.90 }

Hammers.
Maydole's, New List of Dec. 10th, 1878 dis 15 %
Cheney's, List January, '79 dis 25 %
H. Hammonds dis 20 %
Verree dis 5 %
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 and 1.75 dis 25&10 %
Warner & Noble's dis 10 %
Kip's (new list, Dec. '78) dis 20 %

Halters.
Covert's Pat. Rope dis 50 %
Horse and Cattle Ties, Covert's dis 50 %

Hand Cuffs and Leg Irons.
Providence Tool Co.'s Hand Cuffs, $15.00 ₱ doz } dis 10 %
" " Leg Irons, $25 ₱ doz }
Tower's dis 25 %

Handles.—Door or Thumb Latches—

	No.	1	2	3	
Per doz		$0.80	1.00	1.18	1 35 1.40 dis 50&10 p.

Roggin's Latches per doz 40c@80c net
Bronzed Iron Drop Latches ₱ doz 60 @ 80c net
Jap'd Store Door Handles—Nuts, $1.80; Plate $1.20
no Plate, 95c net
Barn Door per doz $4.00, dis 60&10 %
Wrought Chest dis 60&10 %
Surface Chest, Sargent's list dis 60&10 %
Flush Chest dis 60&10 %
Lifting dis 55&10 %
Saw and Plane dis 40&10 %
Boynton's Pat. Loop Saw Handles dis 20 %
" " Centennial Saw Handles dis 20 %
Hammer and Hatchet dis 20 %
Brad Awl ₱ gross $3.00, dis 25&10 %
Hickory Firmer Chisel, assorted, ₱ gross $4.50 }
" " large, " 5.00 }
Apple " " assorted, " 5.00 } dis
" " large, " 6.00 }
Socket " " assorted, " 3.00 } dis
" Framing " assorted, " 5.00 } 25&10 %
File, assorted, ₱ gross 2.75 }
Auger, assorted, ₱ gross 6.00 }
" large, " 7.00 }
Patent Auger, Ives' dis 25&10 %
" Douglass' ₱ set $1.25, dis 10 %
" Swan's ₱ set $1, dis 20&10 %

Hangers.
Barn Door dis 55&10 %
Novelty dis 40 %
Challenge dis 50 %
Climax (Anti-Friction) dis 45 %
Sterling Improved (Anti-Friction) dis 60&10 %
Cheritree dis 10 %
Kidder's dis 40&10 %

Harness Snaps.
Henshaw's....List of 1¼ changed to 14.00, dis 55&2 %
Judd's " " " 14.00, dis 55&2 %
Fitch's (Bristol) " " " 14.00, dis 55&2 %
Hotchkiss' dis 10 %
Andrews' dis 40 %
Sargent's dis 60&10 %
"German dis 65&2 %
Covert dis 40 %

Hatchets.
Isaiah Blood dis 35 %
Shingling, Nos. 1 2 3 ₱ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3 ₱ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3 ₱ doz 7.50 8.00 8.50
Hunt's dis 20&5 %
Shingling, Nos. 1 2 3 ₱ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3 ₱ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3 ₱ doz 7.50 8.25 9.00
Hurd's dis 45 %
Shingling, Nos. 1 2 3 ₱ doz $8.00 $8.50 $9.00
Claw, Nos. 1 2 3 ₱ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3 ₱ doz 8.00 8.50 9.00
M. H. Jones & Co. dis 40 %
Shingling, Nos. 1 2 3 ₱ doz $8.00 $8.50 $9.00
Claw, Nos. 1 2 3 ₱ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3 ₱ doz 8.00 8.50 9.00
Simmon's dis 35 %
Shingling, Nos. 0 1 2 3 ₱ doz $7.50 $8.00 $8.50 $9.00
Claw, Nos. 1 2 3 ₱ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3 ₱ doz 8.00 8.50 9.00
Broad, Nos. 1 2 3 4 ₱ doz 9.00 10.00 12.00 14.00
Nos. 5 6 7 8 ₱ doz 16.00 18.00 20.00 22.00
Collins dis 10 %
Shingling, Nos. 1 2 3 ₱ doz $6.00 $6.50 $7.00
Claw, Nos. 1 2 3 ₱ doz 6.50 7.00 7.50
Lathing, Nos. 1 2 3 ₱ doz 6.00 6.50 7.00

Hay Knives.
"Lightning" ₱ doz $30.00 net
Wadsworth's dis 33⅓ %

Hinges.
Gate, Western ₱ doz $10.00, dis 60&10 %
" N. E. ₱ doz $10.13, dis 60&10 %
" N. E. Reversible ₱ doz $6.50, dis 5&10 %
Gate, Clark's No. 1 ₱ doz $6.00, dis 45 %
" N. Y. State ₱ doz $6.10, dis 60&10 %
" Automatic ₱ doz $12.50 dis 40 %
" Common Sense dis 10 %
" Seymour's dis 40&10 %
" Shepard's Nos. 18, 20 & 26, dis 10 %
Rolled Blind Hinges dis 55&10 %
Rolled Plate dis 55&10 %
Rolled Raised dis 55&10 %
Wrought Strap and T, list Dec. 20, '77 dis 45&10 %
Plate Hinges { 8, 10 & 12 in. $6.85 ₱ 100 ℔ } dis 10 %
"Providence" { over 12 in. $5.50 ₱ 100 ℔ }
Screw Hook and { 8, 10, 12 in., $6.85 ₱ 100 ℔ } dis 10 %
Strap { 14 to 36 in., $5.50 ₱ 100 ℔ }
Heavy Welded Hook { 8 to 12 in., $6.85 ₱ 100 ℔ } dis 10 %
{ 14 in. & up, 5.50 ₱ 100 ℔ }

Screw Hook and Eye	⅜ & 7 in.,	12c	dis 10 %
	¼ in.	12c	
	⅜ in.	14c	
	½ in.	16c	

Hoes.—Solid Shank, C. S. ₱ doz $5.25, dis 15 %
Socket ₱ doz 5.75, dis 15 %
Riveted Shank ₱ doz 3.25 dis 15 %
Grub dis 30 %
Planters' dis 30 @ 35 %
Scovill Pattern dis 25 @ 50 %
Scovill Pattern, Handled dis 25 %
Dick's Pat. Solid C. S. Planters' dis 20&10 @ 30 %
" " Scovill Pattern dis 20&25 @ 35 %
Winsted & Lane, Planters dis 25@50 %
" Scovill Pattern dis 20&25 %

Hooks.
Bird Cage, Sargent's list dis 60&10 %
Cotton dis 50 %
Cotton, Patented (N. Y. Mallet & Handle Wks.) dis 30 %
Cotton (Humason & Beckley Mfg. Co.) dis 40 %
Belt, (new list) ₱ c dis 25&10 %
Bench—Hotchkiss' $5.00 ₱ doz dis 10 %
" Weston's, No. 1, $10.00; No. 2, $9.00 ₱ doz dis 25 %
" McGill's, $3.00 ₱ doz dis 10 %
" Skinner's, $6.25 per doz dis 20 %
Clothes Line Sargent's list dis 60&10 %
" Reading list dis 33⅓&10 %
Ceiling Sargent's list dis 55&10 %
Harness Reading list dis 33⅓&10 %
Coat and Hat, Sargent's list dis 50&10 %
" " Reading dis 33⅓&10 %
" " T. & S. Mfg. Co's list dis 25 %
Tassel (T. & S. Mfg. Co.) dis 40 %
Wrought Staples and Hooks and Staples dis 60&10 %
" Staples, Stanley's list dis 60&10 %
Wire Screw Hooks and Eyes, new list dis 30&10 %
Grass and Bush dis 40@45 %
Whiffletree—Patent dis 45 %
Hooks and Eyes—Malleable Iron dis 60&10 %
" Brass dis 60&10 %

Horse Nails.

	Nos.	5	6	7	8	9	10	
Ausable	₱ ℔	30c	27c	25c	24c	23c	22c	} dis
" Finished, Polished or Blued	"	31c	28c	26c	25c	24c	23c	} 20 %
A C		60	50	40	26	24	22	21	20	19	18	18	18c	} dis
"		1	2	3	4	5	6	7	8	9	10	11	12	} 15 %
Bridgewater Iron Co.	Nos.	5		6		7		8		9		10		
Pointed and Polished		26c		23c		21c		20c		19c		18c		

	Nos.	5	6	7	8	9	10	
Cortland P't'd & Blued		26c	23c	21c	20c	19c	18c	
H. P. Pointed and Finished		26	23	21	20	19	18	} dis 20 %
National, Pointed and Polished, Pat. Fin		28	25	23	22	21	20c	net
Putnam Hammer, P't'd		28	25	23	22	21	20c	10 %

Horse Shoes.—Burden ₱ keg $3. 62
R. I. Horse Shoe Co., Perkins' Improved Light, Medium and Heavy ₱ keg 4.12½
Mule Shoes ₱ keg 5.12½
Perkins' Snow ₱ keg 4.62½

Ice Awls, Chisels, &c.
American Ice Chisel ₱ doz. $6.00 dis 45 %
National ₱ doz $6.25 dis 20 %
Novelty Ice Breakers ₱ doz $6.25 dis 20 %
White's Sliding Head Picks ₱ doz $1.50 dis 40 %
Duniap's Ring Picks ₱ doz $3.00, dis 40&10 %
Wood Head Picks, Sargent's ₱ doz $1.85, dis 60&10&10 %
Iron " ₱ doz 1.85, dis 60&10&10 %
Ice Mallets Pick in Head ₱ doz 1.75 net
" Pick in Handle ₱ doz 3.00 net
Ice Axes Small, Cast or Malleable ₱ doz 1.20 net
Kitchen Ice Tongs ₱ doz 2.25 net
Combination Ice Tools ₱ doz $2.50 dis 30&10 %

Kettles.
Brass, 7 to 13 inches inclusive ₱ ℔ 35c dis 10%
Brass, larger than 13 inches ₱ ℔ 40c dis 10 %
Enameled dis 50 %

Knives.
Ames' Butcher Knives dis 20 %
" Shoe dis 15 %
" Bread ₱ doz $1.50, dis 15 %
Moran's

Punches.
Belt or Drive ..... ₩ doz $2.00; 2.25; 2.50, dis 60 %
Bemis & Call Co.'s Cast Steel Drive..... dis 40&30 %
" " Springfield Socket..... dis 50&10 %
Spring..... ₩ doz $7.00, dis 45 %
" Leach's Patent..... dis 15 %
Bemis & Call Co.'s Spring and Check..... dis 50 %
Solid. Tinners'..... ₩ doz $1.44, dis 50 %

Rail.
Sliding Door Wrought Brass..... ₩ lb 38c dis 10 %
" " Iron, Painted . ₩ foot 9c. dis 60&10 %
Barn Door, ⅜, ½ and ⅝ inch..... dis 60&10 %
" for N. E. Hangers..... dis 60&10 %

Rakes.
Cast Steel..... dis 15 %

8	10	12	14	16 teeth.
$4.00	4.75	6.40	7.25	8.00

Malleable..... dis 15 %

10	12	14 teeth.
$3.60	4.00	4.40

Razor Straps.
Genuine Emerson..... dis 40 %
Badger's Emerson..... dis 40 %
Badger's (not Emerson)..... dis 25 %
Evans'..... dis 40 %
Imitation Emerson..... ₩ doz $2.75, dis 40&10 %
Hunt's..... dis 40&5 %
Chapman..... dis 15 05 20 %
Saunder's..... dis 10 %
Torrey's..... dis 25 %

Rivets.
Iron and Tinned } new list Oct. 1, 1879 } ..... dis 45 %
In bulk } ..... dis 30 %
Copper Rivets and Burs..... dis 30 %

Nos..	7	8	9	10	11	12	13	14	15
₩ lb..	490	500	520	540	550	580	600	640	700

Tinned Iron Belt Rivets and Burs..... dis 35 %

Rivet Sets..... dis 50 %

Rods.
Stair..... New list, March 1, '79, dis 25 %
" American Patent..... dis 40 %

Rollers.
Barn Door, Sargent's list..... dis 55&10 %
Novelty..... dis 10 %
Acme (Anti-Friction)..... dis 45 %

Rope. Manufacturers' Net List, Nov. 18, 1879
Manila..... ½ inch and larger ₩ lb 14½c
" ⅜ inch ₩ lb 15 c
" ¼ and 5-16 inch ₩ lb 15½c
Tar'd Rope..... ₩ lb 14 c
" " Lath Yarn..... ₩ lb 14 c
" Hay Rope..... ₩ lb 14½c
Sisal..... ½ inch and larger ₩ lb 13½c
" ⅜ inch ₩ lb 13 c
" ¼ and 5-16 inch ₩ lb 13½c
" Hay Rope..... ₩ lb 12½c

Rules.

	Boxwood.	Ivory.
Chapin's, Standard, Stanley, Stephens, Willis Thrall & Son	dis 60 & 10 %	dis 50 & 10 %

Sad Irons.
From 1 to 10 lbs..... ₩ lb 33½c net
Self Heating..... ₩ doz $2.50 net
" Tailors'..... ₩ doz $18.00 net
Gleason's Shield and Toilet..... dis 25 %
Enterprise Patent Cold Handle..... dis 25 %
Mrs. Pott's Pat. Cold Handle, "Crown"..... dis 25 %
Combined Fluter and Sad Iron..per doz $12.00, dis 15 %

Sand Paper.
Baeder & Adamson's Flint, 00 to 1½..$4.25 ₩ ream
" " " 2, 2½ & 3. 4.75 ₩ ream } dis
" " " Assorted 4.25 ₩ ream } 20@
" " Star..... 3.25 ₩ ream } 25 %
" " Emery..₩ ream $6.50 @ 11.50
New England, same list as B. & A. Flint.... dis 20@25 %
Gaze's..... dis 20&5 %

Sash Cord.
Common..... ₩ lb 16 @ 13½c net
Patent..... ₩ lb 18c net
Silver Lake Russia Flax..... ₩ lb 55c, dis 10 %
" White Cotton..... ₩ lb 55c, dis 10 %
" Drab Cotton..... ₩ lb 60c, dis 10 %
Raw Hide..... dis 25 %
Steel Ribbon..... dis 10 %

Sash Locks.
Clark's, No. 1, $10.50; No. 2, $8.00 per gross..... dis 50%
Fergusson's..... dis 33⅓ %
Walker's..... dis 10 %
Hammond's Window Springs..... dis 25 %
Northup Window Springs.....$9.00 per gross, dis 10 %
The Perfect, Clark & Smith, plain Jap'd ₩ gro $10.00 net
" " Por. Knob Jap'd. ₩ gro 14.00 net
" " Nickel-Plated... ₩ gro 27.00 net

Sash Weights.—Solid Eves..... ₩ lb 1¾@2c

Sausage Stuffers or Fillers.
Miles..... ₩ doz $20, dis 30 %
Perry..... ₩ doz, No. 1, $15: No. 0, $21, dis 30&10 %
Fraw Cut No. 4..... each $30.00, dis 20 %
Enterprise Mfg. Co..... dis 20 %
Silver's..... dis 25 %

Saws.
Disston's Circular..... dis 35 %
" Mill..... dis 35 %
" Cross Cut..... dis 25 %
" Hand, Panel, Rip, &c..... dis 20 %
Boynton's Lightning, Cross Cuts, new list..... dis 15 %
" " One-Man, all lengths, " ..... dis 20 %
" Billet Webs, 30 in. " ..... dis 30 %
" Lightning Buck Saws X Bar..... dis 25 %
Wheeler & Clemson Mfg. Co.'s Hand..... dis 20 %
" " " Cross-Cut..... dis 35 %
Lightning Hand and Pruning..... dis 40 %
Livingston's Butcher and Kitchen..... dis 20 %
" Framed Wood—

Nos....	101	102	103	104	105
Per doz..	$10.00	8.7	10.00	7.50	5.25 net

Saw Frames.
White, Vermont..... ₩ doz $1.35, dis 25 %
Red, Polished and Varnished..... ₩ doz $2.00, dis 25 %
Saw Rods..... $10 list dis. 10&10 %

Saw Sets.
Boynton's Patent X Cut, per doz. $12.00; Hand Saw, per doz., $10.00..... dis 25 %
Stillman's Genuine..... ₩ doz $3.50@$4.00 net
" Imitation..... ₩ doz $2.25, dis 35 %
Common Lever..... per doz $2.00, dis 35 %
Leach's..... No. 0, $8.00; No. 1, $10.00, dis 15 %
Nash's..... No. 1, $8.40; No. 2, $4.20, dis 20 %
Hammer, Hotchkiss..... $6.50, dis 15 %
" Bemis & Call Co.'s New Pat..... dis 40&5 %
Bemis & Call Co.'s Lever & Spring Hammer..dis 35&10 %
" " Plate and Cross Cut..... dis 20 %
Aiken's Genuine..... $13.00 dis 60&10 %
" Imitation..... $7.00. dis 5 %
Hart's Patent Lever..... dis 20 %
Disston's..... dis 20 %

Scales.
Hatch, Counter, No. 171..... ₩ doz $36, dis 40 %
" Tea, No. 161..... ₩ doz $12.00 dis 40&5 %
Union Platform..... $9.00. dis 50 %
Fairbanks'..... dis 20 %
Howe's..... dis 20& 5 %
Chatillon's Grocers'..... dis 40 %
" Eureka..... dis 25 %
Family Universal..... dis 45 %
" Favorite..... dis 40 %
" Turnbull's..... dis 35 %
Scale Beams, Chatillon's list..... dis 25 %
" Sargent's list..... dis 40&10 %

Scrapers.
Adjustable Box Scraper (S. R. & L. Co.), $6.50. dis 25&10 %
Box, 1 Handle..... ₩ doz $5.00, dis 10 %
" 2 " ..... ₩ doz 6.00 dis 10 %
Defiance Box and Ship..... dis 25&10 %
Foot..... dis 70&10 %
Slip (common)..... per doz $3.00 net
" (Providence Tool Co..... dis 10 %

Screw Drivers.
Douglass Mfg. Co..... dis 30&10 %
Disston's..... dis 52½ %
Disston's Patent Excelsior..... dis 52½ %
Buck Bros..... dis 25 %
Stanley Rule & Level Co's, Varnished Hdls..dis 50&10 %
" " " Black Handles...dis 40&10 %
Sargent & Co.'s..... dis 50&10 %

Screws.
Flat H'd Iron..... dis 40 %
Round Head Iron..... dis 40 %
Flat Head Brass..... dis 40 %
Round Head Brass..... dis 25 %
Brass and Silver Capped..... dis 40 %
Japanned, list of Plain Screws..... dis 40 %
Lag or Common Coach..... dis 45 %
Coach Patent Gimlet Point, List per 100..... dis 45 %
Fed..... dis 10&10 %
Machine, Flat Head, Iron, Am. Screw Co..... dis 65 %
" Round Head, Iron, " " ..... dis 60 %
Bench, Iron..... dis 65&10 %
" Wood, Beech ..... ₩ doz $3.00, dis 15 %
" Hickory..... dis 20&10 %
Hand..... dis 25&10 %
Hand Rail, Sargent's..... dis 55&10 %
" " Humason, Beckley & Co's ..... dis 40 %
" " Am. Screw Co..... dis 40&10 %
Jack (Wilson's)..... dis 25 %

Screw Window Balances.
R. B. Hugunin's, Single gro., $23.94; 5 gro. $22.68, dis 5 %

Shears and Scissors.
Cast Iron, (American)..... dis 50&10 %
Pruning..... see Pruning Hooks and Shears.
Barnard's Lamp Trimmers..... ₩ doz $3.75
Tinners'..... dis 20 %
Cast Steel, List, Nov. 25, 1879..... dis 80 %
Seymour's " " ..... dis 60 %
Heinsch's " " ..... dis 60 %
" Tailors' Shears..... dis 40 %

Sheaves.
Sliding Door, M. W. & Co., list..... dis 33⅓&2 %
" R. & E. list..... dis 60&2 %
" Patent Roller..... dis 10 %
" " " Hatfield's..... dis 55&10&2 %
" Russell's Anti-Friction ..... dis 55&10&2 %
" Moore's Anti-Friction..... dis 40 %
Sliding Shutter, R. & E. list..... dis 55&10&2 %
" Sargent's list..... dis 55&10 %
Moore's Anti-Friction (Hanging)..... dis 40 %
Philadelphia Hanging..... dis 40&2&2 %

Shovels and Spades.
Ames. New list, Jan. 1, '79, with changes of Oct. 15..... dis 20 %
Hussey Binns & Co., Patent..... dis 15 %
" Association List..... dis 5 %
Old Colony (changes in list Oct. 15, '79)..... dis 30 %
Remington's (Lowman's Patent)..... dis 30 %
Dunning's Shovels and Scoops..... dis 30&7½ %
B. Rowland's "Regular,"..... dis 50 %
" Patent..... dis 40&5 %
Oxford Patent..... dis 40&5 %

Shovels and Tongs.
Iron and Brass Head, R. & E. list..... dis 50&10&2 %
Polished Steel . ...new list, dis 30&5&10&2 %

Slates.
Square Frames, Round Cornered, by case..... dis 70 %
Less than a case..... dis 65&10 %

Spoke Shaves.
Defiance Metallic..... new list, dis 25&10 %
Iron..... dis 40 %
Wood..... dis 30 %
Bailey's (Stanley R & L. Co.) new list..... dis 25&10 %

Spoke Trimmers.
Bonney's..... ₩ doz $10.00, dis 40&10 %
Stearn's..... ₩ doz $10.00, dis 40 %
Ives'..... No. 1, $15.00; No. 2, $12.00 ₩ doz, dis 50&10 %
Douglass'..... ₩ doz $9.00, dis 20&10 %

Spoons.
Pat. Thread Basting..... dis 35 & 5 %
" Riveted Table and Tea..... dis 40 & 5 %
Solid Table and Tea..... dis 45 & 5 %
Britannia..... dis 50&5 %
Derby Silver Co..... dis 40&5&5 %
L Boardman's Sons, A1..... dis 40&5&5 %
W. Rogers & Son, A. A..... dis 40&5&5 %
Reed & Barton..... dis 40&5 %
Hall & Elton..... dis 40&5 %
Holmes, Booth & Haydens..... dis 40&5 %
German Silver..... dis 50&10&5 %
Cast Steel, Sil. Plated..... dis 33⅓&5 %
Diamond Steel (L. Boardman's Sons)..... dis 30&5 %
Tin (P. S. & W.), Teas..... $1.25 ₩ gross, net
" " Tables..... $2.00 ₩ gross, net
Tin Cowles Hdw. Co.)..... dis 10 %
" " " case lots..... dis 20 %

Stocks and Dies.
'Lightning" Screw Plate..... dis 10 %

Stone.
Hindostan Stone..... ₩ lb 6c } dis 33⅓
" Ax Stone..... ₩ lb 8c } &10 %
" Slips..... ₩ lb 10c }
Sand Stone..... ₩ lb 6c. dis 33⅓&10 %
Washita Stone..... No 1. ₩ lb 18c net
" ..... No 2. ₩ lb 14c net
" Slips..... No. 1, ₩ lb 36c net
Washita Stone (Boyd & Chase)..... No. 1 ₩ lb 14c net
" " mo'ted (Boyd & Chase) 6, 7 & 8 in, dis 30 %
Turkey Oil Stone (Boyd & Chase)....4 to 8in, $1.00 ₩ lb, dis 10 %
" Slips " ....$2.50 ₩ lb, dis 20 %
Lake Superior (Boyd & Chase)..... ₩ lb 20c, dis 10&5 %
" Slips " ₩ lb 45c, dis 10&5 %
Grindstones. Family, Loring's..... dis 10 %

Stove Polish.
Joseph Dixon's..... ₩ gross $6.00. dis 10 %
Gem..... ₩ gross $4.50, dis 5 %
Gold Medal..... ₩ gross $6.00, dis 25 %
"Mirror"..... ₩ gross $6.00, dis 5 %
Ruby..... ₩ gross $4.75, net
Rising Sun..... ₩ gross $4.75, net
Dixon's Plumbago..... ₩ lb 8c. net

Squares.
Steel..... dis 50 %; full cases, dis 50&10 %
Iron..... dis 40 %; full cases, dis 50&10 %
Nickel Plated..... add $2.50 @ $4.00 ₩ doz, net
Try Squares and T Bevels..... dis 50&10 %
Star Try Squares and Bevels..... dis 35 %
Disston's Try Squares and T Bevels..... dis 52½ %
Winterbottom's Try and Mitre..... dis 25&10 %

Tacks, Brads, &c.
List of Oct. 21, 1879:
Swedes Iron Tinned Tacks..... dis 50 %
Swedes Iron Tacks, all kinds..... dis 45 %
Gimp and Lace Tacks..... dis 45 %
Copper Tacks and Nails..... dis 40 %
All other Tacks, &c..... dis 40 %
Double-Pointed Tacks..... dis 40&5 %

Tap Borers.
Common and Ring..... dis 20&10 %
Ives' Tap Borers..... dis 20&10 %
Enterprise Mfg. Co..... dis 20 %

Tapes, Measuring.
American..... dis 10 %
Spring Tapes..... dis 25&10 %

Thermometers.
Tin Case..... dis 70 %

Tobacco Cutters.
Enterprise Mfg. Co. (Champion)..... dis 20 %
Wood Bottom..... ₩ doz $12.00, dis 20@45 %
All Iron..... ₩ doz $10.50, dis 50&5 %
Nashua Lock Co.'s..... ₩ doz $18.00, dis 50 %
Toe Calks.—Winsted..... ₩ lb 9c. dis 5 %

Tinners' Tools and Machines.
Machines (P. S. & W.)..... dis 9@10 %
Tools (P. S. & W.)..... dis 15@20 %

Traps.
Game, Newhouse..... dis 30 %
" Newhouse Pattern..... dis 50&10 %
" Blake's Patent..... dis 40 %
Mouse, Wood, Choker..... ₩ doz holes, 170
" Round Wire..... ₩ doz $1.50, dis 10 %
" Cage " ₩ doz $2.50, dis 10 %
" Catch-em-alive..... ₩ doz $2.75, dis 10 %
Rat. "Decoy"..... per doz $10.00, dis 10 %

Trowels.
Lothrops Brick and Plastering..... dis 10&15 %
Reed's Brick and Plastering..... dis 15 %
Disston's Brick and Plastering..... dis 20 %
Peace's Plastering..... dis 30 %
Clement & Maynard's..... dis 20 %
Rose's Brick..... dis 15 %
Brades' Brick..... dis 20 %
Worrall's Brick and Plastering..... dis 10&15 %
Garden..... dis 40 %

Triers.
Butter and Cheese..... dis 25%

Vises.
Solid Box..... List. of July 1, '79 dis 35 %
" "Crown" (A. H. Hilidick) 4 to 100 lb, 15c dis 20 %
" Peter Wrights..... 15½c
Parallel, Parker's..... dis 20 %
" Wilson's..... dis 20 %
" Howard's..... dis 25&10 %
" Merrill's..... dis 20 %
" Sargent's..... dis 40&10 %
" Trenton..... dis 20 %
" Backus and Union..... dis 25 %
" Fisher & Norris..... dis 15&10 %
" Stevens'..... dis 25 %
" Simpson's Adjustable..... dis 25&10 %
'Family," List..... net
Saw Filers, Bonney's..... ₩ doz $24.00, dis 25&10 %
" Stearn's..... dis 20&10 %
" Hopkins'..... ₩ doz $17.50 dis 10 %
Lowell Hand Vises..... dis 20 %
Richardson's Vise and Anvil..... dis 30 %

Washer Cutters.
Smith's Patent " " ..... ₩ doz $12.00 dis 20 %
Johnson's..... ₩ doz $12.00. dis 35 %
Penny's..... ₩ doz $14.00 and $16.00. dis 45 %
Appleton's..... ₩ doz $8.00, dis 20&10 %

Washers.—See Nuts and Washers.

Weather Strips.
Protective Ventilator Co. s ..... dis 25 %

Well Wheels.—Revised list..... dis 60&10%

Wire.
Brass and Copper..... List of July 1, 1878.... dis 10 %
Bright and Annealed..... Nos. 0 @ 18. dis45 @ 47½ %
" " ..... Nos. 19 @ 26, dis 55 @ 57½ %
" " ..... Nos. 27 @ 30, dis 60 @ 62½ %
Coppered..... Nos. 0 @ 18.dis 40 @ 42½ %
Galvanized, Nos. 0 to 6..... ₩ lb 10c, dis 35 @ 37½ %
" Nos. 7 to 18.....market list, dis 35 @ 37½ %
Tinned, Nos. 0 to 18..... dis 37 ½ @ 42½ %
Cast Steel..... dis 25 @ 30 %
Tinned Broom Wire, Nos. 13 to 25..... dis 55 @ 57½ %
Annealed Fence, Nos. 8 and 9..... dis 45 @ 47½ %
" Grape, Nos. 10 to 14..... dis 45 @ 47 ½ %
Galvanized Telegraph, Nos. 7 to 9 ..... ₩ lb 8½c
" " Nos. 10 and 11..... ₩ lb 9½c
" No. 12..... ₩ lb 10c
Fence Staples..... ₩ lb 6 @ 6½c
" Staples, Galvanized..... ₩ lb 7½ @ 8 ¦
Straus Steel Wire..... $7.00 to $ gold
Japanned Barb Fence ..... ₩ lb 11½c
Galvanized " ..... ₩ lb 12½c
Steel Music Wire, Nos. 12 to 27..... ₩ 100 lbs $1.00. net
Turner & Seymour Mfg. Co., Picture Wire, dis 80&20&10 %
Judd's Picture Wire..... dis 80&20&10 %
Clothes Line Wire, Galvanized..... ₩ coil 90 @ 40c net
Green Wire Cloth, per sq. foot, 30 @ 3½c..... net

Wrenches.
American Adjustable..... dis 45 %
Baxter's Adjustable "S,"..... dis 20 %
" Diagonal..... dis 20 %
Collins & Co.'s..... dis 45 %
Coes 'Genuine..... dis 55 %
" "Mechanics"..... dis 55&10 %
" Pattern, Malleable..... dis 70&10 %
Girard Standard..... dis 60&10 %
Girard Agl..... 70 %
Davis' Patent Duplex..... new list, dis 20 %
Bemis & Call's Patent Combination..... dis 20 %
" " Merrick's Pattern..... dis 40&5 %
" " Briggs' Pattern..... dis 35 %
" Cylinder or Gas Pipe..... dis 25&10 %
Van Wagoner & Williams' Basin..... per doz $4.50
Aiken Pocket (Bright)..... $6.00. dis 60&10 %
The Favorite Pocket (bright)..... per doz $8, dis 60 %
Webster's Pat. Combination..... dis 35 %

Wringers.

	Per doz.
Peerless, No. 0, no Cogs	51.00
" No. 1, "	54.00
" No. 2½, with Cogs	60.00
" No. 2, "	63 00
" No. 3, "	71.00
" No. 4, "	93.00
Unique, No. 0	51.00
" No. 1	54.00
Universal, XX No. 2½	60.00
" " No. 2	63.00
" " No. 1½	71.00
" " No. 1	93.00
" " No. 0	each, 12.00
" " No. 12	" 20.00
" " No. 18	" 24.00
" " No. 22	" 32.00
Crown No. 2	54.00
" No. 2½	63.00
" No. 3	69.00
Eureka, No. 1	57.00
Novelty, No. 10, with Cog Wheels	60.00
" No. 2, "	63.00
Excelsior, No. A, with Folding Bench	78.00
" No. E, for Set Tubs	66.80
Keystone No. 1, Wood Frame, no Gear	54.00
" No. 2, Iron "	54.00
" No. 10, Wood " Common Gear	60.00

Stamped Tinware.—New List Dec. 1, 1878.
Common Stamped Ware..... list net
Stamped Deep and Retinned Ware..... list net

SHEET COPPER.



STEAM PUMPS,

STEAM ENGINES,

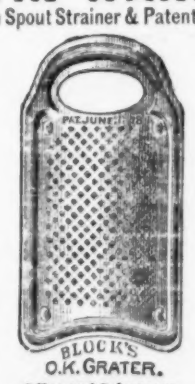
Air Compressors,

HOISTING ENGINES.

The Norwalk Iron Works Co.,

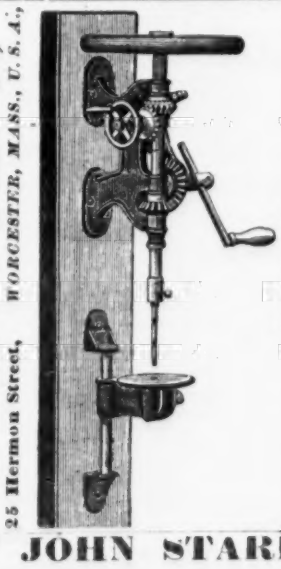
SOUTH NORWALK, CONN.

DAVID BLOCK,
Manufacturer of
Plain, Stamped & Japanned
TIN WARE.
Block's Tin Spout Strainer & Patent O.K. Grater.



Office and Salesroom,
69 BAYARD STREET,
Factory, 139 & 141 Centre St., NEW YORK.

GEO. C. TAFT,
25 Hermon Street, WORCESTER, MASS., U. S. A.,
Manufacturer of
HAND AND POWER DRILLING MACHINES
of the most approved style. Those dealing in these goods will please send for circular and price list.



JOHN STARR,
Hardware & Metal Broker,
AND
MANUFACTURERS' AGENT,
Halifax, Nova Scotia,

Representing in the Dominion of Canada several American Manufacturers, is ready to accept further Agencies. Satisfactory references.

ANCHOR BRAND
AXLES.
For all Styles Carriages and Wagons.
Annual production 180,000 sets.
SHELDON & CO., Auburn, N. Y.

GEORGE W. BRUCE,
1 Platt St., New York,



Agent for CLEMENT & MAYNARD'S Trowels, Hoes, Shovels, Spades and Scoops. Their Trowels and Hoes have entirely supplanted the English by their quality and cheapness, while all their goods compare advantageously with those of other makers, and are largely exported.

NEW ENGLAND BUTT CO.,
MANUFACTURERS OF
Drilled and Common Cast Butts,
Plain, Japanned, Bronzed, or Japanned with Plated Tips.
ALL KINDS OF BRAIDING MACHINERY.
Also, Manufacturers of
Hardware Specialties.
We will be pleased to furnish estimates and take contracts for the manufacture of large lots of small machines, or articles made mostly of cast iron.

FACTORIES: 31 Pearl St., Providence, R. I.
WAREHOUSE: 30 Platt St., New York.

T. C. CONWAY, 90 Chambers Street, New York,



Sole Agent for
THE RED JACKET REVOLVER,
Rupertus' Revolvers, Breech-Loading Shot Guns and Rifles; Nichols Cutlery Co.'s Table Knives and Forks; Star Cutlery Co.'s Pocket Knives.
Rupertus' Single Breech-Loading Shot Gun, Twist Barrel.



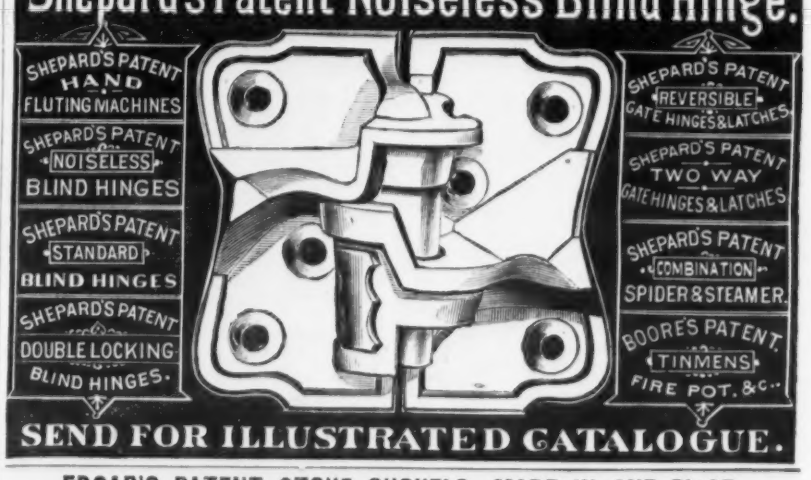
Sidney Shepard & Co.'s
PATENT
PALACE
Coal Vases.

This is the most popular Coal Vase ever put upon the market.

1879.
Eight Patterns.
All New Styles

Please send for Illustrated Price Lists.
Address sole manufacturer,
SIDNEY SHEPARD & CO.,
Proprietors Buffalo Stamping Works.
Buffalo, N. Y., or Chicago, Ill.

CHAS. G. SHEPARD — WALTER J. SHEPARD
SHEPARD HARDWARE CO.
BUFFALO, N.Y.
SOLE MANUFACTURERS OF
Shepard's Patent "Noiseless" Blind Hinge.



SEND FOR ILLUSTRATED CATALOGUE.

EDGAR'S PATENT STOVE SHOVELS, MADE IN ONE PIECE.
The BEST and CHEAPEST in the world.



Twelve different styles and sizes.
OUR CELEBRATED BRANDS,
THE CEM, VICTOR, U. S., O. K., and EXCELSIOR
Send for Catalogue.
NEW YORK STAMPING CO., Sole Manufacturers,
311 and 313 Avenue A, New York, U. S. A.

THE METAL WORKER.

A Weekly Journal of the
STOVE, TIN, PLUMBING AND HOUSE-FURNISHING TRADES.
With which are Incorporated
THE SHEET-METAL WORKER and THE STOVE AND TIN-TRADE JOURNAL.
Published every Saturday Morning.

The Meta Worker, begun January 1, 1874, has made itsef invaluable to the trades it represents, and is rapidly increasing in circulation and influence. It is so well known as to need but brief introduction, even to those not regular subscribers; but a synopsis of its principal features may serve to show in part its practical utility

GENERAL FEATURES.—*The Metal Worker* is a paper of general as well as special interest to all classes of our readers. Its pages are a record of progress in such of the arts and sciences as are directly or indirectly related to the trades we represent. It is liberally illustrated, and is as attractive in appearance as it is convenient in size and shape. Its success is the best evidence of its value to the large classes we address.

SHEET METAL WORK.—*The Metal Worker* is the only journal giving any attention to matters pertaining to the various Sheet Meta industries. Its articles on pattern cutting, extending over nearly four years, have been practica and valuable, and its conductors have spared neither trouble nor expense in making this department useful. The best talent obtainable has been engaged to assist in giving our readers accurate rules and diagrams covering all branches of pattern cutting, from the simplest to the most complex, and we have always been glad to give rules and drawings for anything asked for by our readers. These rules and diagrams have been to a great extent original, and much care has been taken to make them accu

PLUMBING.—From the first, *The Metal Wo* has given special and intelligent attention t literature of Plumbing, and has made itse authority with the trade on all matters conn with the Plumber's art. The intimate acq ance of its Editor, Mr. James C. Bayles, wi theory and practice of plumbing, hydrauli sanitary science in their relations to house age and water service, has enabled *The Worker* to furnish the trade with a practic shop literature, and its labors in this fie done much to raise the standard of work and extend the market for good mate fixtures. Hundreds of its readers refe Editor all questions which call for knowl side of their own experience, and throug umns we have thus been able to give t vast amount of practical information, n every-day wants of the reader.

How The Metal Worker is Regarded by

The following extracts from the da correspondence of our office show ho *Worker* is regarded throughout the c

From C. E. MAGEE, Stoves, Tinware, ter, Ind.

"I look upon *The Metal Worker* as tures of the store, and think no perso trade and tin business can do or ou out it."

From JOE G. BROWN, California, P Ohio.

"I do not know of one subscriber journal who does not think that s your weekly issues is not worth the for one year."

From O. & R. JARDINE, Plumbers, ters, Springfield, O

"We consider your paper as think that every plumber in the scribe for it."

From JAMES B. WELSH, Manayu

"I prize *The Metal Worker* ve anxiously forward to Monda coming."

From H. C. AUSTIN, Stoves a City, Tenn

"*The Metal Worker* comes to clock and always finds a welco is one paper that I intend to mechanic. I have on file ever scribed for it, and I would no it has cost me for them. T chanic ought to have. If I subscription before my time sending me one copy. Just send you the money at once."

From COLE BROS., Stoves

"*The Metal Worker* is abou our business as a set of tin

From C. F. KRONER, Stove

"Inclosed please find a for your valuable *Metal W* the amount of information idea. I see in your corr regarding a practical boo If those inquirers will ch asked, they may in cours our trade which would p value of Warn's or Bli regular scrap-book of T ence and other notes o work, it has on several mas. We wish you all laborious work of givi surely deserves and m

From A. H. DAVIS,

"*The Metal Worker* great deal of inform ready answers to all who read them."

From WILSON & Fitter

"We think your trade has long nee not contain someth

From THOS. O. AN

"I consider you amount charged improving it as y of another year I would not und stop, for I consi

From GEORG

"I find it to b the trade that it under any c scribers will su benefit of the

From J. McDA

"Although business, you pensable arti information source."

From E. A.

"It is wor

From S. A.

"*The Me* We find it things in other pap

"I appr like to be ions a m ward to with ant and the and tin format

From

"I c pecial to pu to m pape

"I cons

"*The* always."

From W. J. HANCOCK, Stove City, Utah.

"I always anticipate a treat in perusing the columns of *The Metal Worker*, and my anticipations are never disappointed. Its tone on all matters of public interest within its particular sphere is lucid, plain and comprehensive; its trade reports and prices current are reliable, and it furnishes invaluable information to men of business, particularly those whose interests are connected with work in metals."

From B. MEYERS & CO., Stoves and Tin, Dalton, Ga.

"We do not see how we could do without your paper. It gets better and better. We get more information on metal subjects from it than from all the other papers we can get."

From DAVID FISK, Geneva, Ohio.

"I like *The Metal Worker* very much. You may consider me a permanent subscriber. It is something I have long wanted."

From W. ERNY, Stoves and Tin, Jasper, Ind.

"I am very much pleased with *The Metal Worker* I would not do without it."

PRICE, POSTPAID: ONE YEAR, $1.20; SIX MONTHS, 60 CENTS; THREE MONTHS, 30 CENTS.

A trial is earnestly requested from all who are not acquainted with the paper. It is the cheapest weekly trade paper published, and it is unquestionably one of the very best. Its subscribers nearly always renew.

DAVID WILLIAMS, Publisher,
83 Reade street, New York.

CARPENTRY AND BUILDING.

A new illustrated monthly publication, devoted to all branches of the wood-working and building trades.

It will be eminently practical, treating only of those subjects which interest the trades addressed, and giving information which every one connected with the building industries can make useful in his daily work.

It will be liberally illustrated with wood cuts, plans, details, &c., and no expense will be spared to [illegible] of real value to all intelligent mechanics [illegible] which it treats.

[illegible] will be discussed, may be [illegible] and complete as may be [illegible] the greatest interest and value [illegible] the exchange and comparison of ideas and experiences on all subjects of practical interest. We shall always be ready to undertake any practicable line of investigation which our readers may suggest, or to give them any information which we have or can obtain. We shall value suggestions from whatever source received, and hope for such success as our work may honestly merit.

CARPENTRY AND BUILDING

is published monthly. Subscriptions are solicited on the following terms:

One copy one year, postpaid	$1.00
" " six months, "	.50
" " three months, "	.25

Advertisements will be received on reasonable terms, which will be made known on application; but no advertisements of doubtful character, or which we have reason to believe are calculated to mislead or deceive our readers, will be taken at any price, nor, if inadvertently taken, will they be retained in our columns.

DAVID WILLIAMS, Publisher,
83 Reade street, New York.

THE IRON AGE.

A VEVIEW OF THE HARDWARE, IRON AND METAL TRADES.

The circulation of *The Iron Age* is more than double that of any other journal of its class in the world

Established in 1855 under the name of *The Hardware Man's Newspaper*, changed in 1859 to *The Iron Age*, it is the oldest publication of its class in the world. The next in age is the *Ironmonger* of London, established in 1859. Until 1870 *The Iron Age* was the only publication of its class in the United States.

The largest newspaper in the world is *The Iron Age*, each number of which is much larger than [illegible] *Times*, and contains over 25 per cent. [illegible] copy of *Harper's Magazine*. [illegible] occupied twenty-[illegible] in favor

Weekly....$5; [illegible]
6 roubles (gold); 25 lire; 23 [illegible]
Semi-Monthly, half the price of Weekly.
Monthly, one-quarter the price of Weekly.

ADVERTISING.—Per square (one inch single column), one insertion, $2.50; one month, $7.50; three months, $15.00; six months, $25.00; one year, $40.00, payable in advance.

REMITTANCES should be made by draft, payable to the order of David Williams, on any banking houses in the United States or Europe; or when a draft cannot be obtained, the amount may be made up in the postage stamps of any country. A dollar is equal to four shillings or five francs.

NEWSDEALERS OR BOOKSELLERS in any part of the world may obtain *The Iron Age* through the American News Company, New York, U. S. A.; the Wilmer & Rogers News Company, New York, U. S. A. and London, England; or the San Francisco News Company, San Francisco, California, U. S. A.

DAVID WILLIAMS, Publisher,
83 Reade street, New York.

THE FOUNDING OF METALS.

A PRACTICAL TREATISE ON THE MELTING OF IRON,
With a
DESCRIPTION OF THE FOUNDING OF ALLOYS.
Also
Of all the Metals and Mineral Substances used in the Art of Founding.

BY EDWARD KIRK.

Third edition, twenty-one illustrations, $2.50.
Sent, postpaid, on receipt of price.

"THE FOUNDING OF METALS" is a new and practical treatise that has just been published on the melting of metals for the manufacture of castings from the pig or crude material, giving a complete description of

Wrought Iron, Cast Iron and Steel, Red-Short, Cold-Short and Neutral Iron.

with directions for mixing and melting cast iron [illegible] regulate the shrinkage and make soft, [illegible] castings out of inferior brands

"THE FOU[illegible]" is the latest work published on [illegible] ness, and contains a great deal of practical information for the foundryman. It is illustrated with *twenty one* plates, showing all the principal reverberatory furnaces, cupolas and tuyeres in use, with complete directions for melting iron and a description of all the other metals and recipes for all the principal alloys in use at the present time, with directions for the building of and management of brass furnaces, directions for making and using crucibles, and a description of all the clays, sands, fuels, &c., used in foundries.

This valuable work will be sent to any address, postpaid, on receipt of $2.50.

DAVID WILLIAMS, Publisher,
83 Reade street, New York.

HOUSE DRAINAGE AND WATER SERVICE IN CITIES, VILLAGES AND RURAL NEIGHBORHOODS.

BY JAMES C. BAYLES,
Editor of *The Metal Worker* and *The Iron Age*.

SECOND EDITION.

Illustrated with Wood Cuts and Large Folded Plates from Working Drawings, showing the Methods Employed in the Best Plumbing Practice of the Time.

The publisher has pleasure in announcing a Second Edition of this standard work, which is the only book that fully and exhaustively discusses the principles and mechanical details of American plumbing practice. Its especial value for the practical plumber will be seen from the following synopsis of its contents:

Chapter I.—Hygiene in its Practical Relations to Health.

This chapter is introductory, giving a brief sketch of the progress which has been made since the [illegible] Ages in reforming evils prejudicial to the [illegible] showing by comparisons drawn [illegible] practice and mediæval [illegible] toward secur- [illegible] and

[illegible] of [illegible] in [illegible] The [illegible] gered, [illegible] ntila-

[illegible] ilation

[illegible] rvice in [illegible]

[illegible] aling with [illegible], and dis- [illegible]. The ex- [illegible] awn from [illegible] number of [illegible] he has in- [illegible] try, and in [illegible] itute a com- [illegible] ater service.

Plumbing.

[illegible] chapter to be [illegible] itary science. [illegible] nt of research [illegible] atory work in [illegible] tive discussion [illegible] s composition [illegible] l in plumbing [illegible] likely to exist. [illegible] investigations [illegible] and made clear

[illegible] ulics Applicable [illegible].

[illegible] of plumbers and [illegible] es in conducting [illegible] much valuable in [illegible] torage tanks, cis- [illegible], and the various [illegible] pumping.

[illegible] ction and Drainage [illegible] uses.

[illegible] n Country Districts. [illegible] tively with conditions [illegible] untry districts. The [illegible] unhealthfulness in lo- [illegible] e and surroundings; [illegible] rces of water supply, [illegible] c.

[illegible] *Concerning the Sani- Premises.*

[illegible] e care of premises, the [illegible] filth, the functions and [illegible] nts, &c.

[illegible] *umber and His Work.*

[illegible] ations of the plumber to [illegible] ier and the public, and [illegible] y for the bad plumbing [illegible] ere it properly belongs.

[illegible] d Water Service" is a large [illegible] ges, with a full index and [illegible] page to facilitate reference [illegible] bstantially bound in English [illegible] edges.

[illegible] lumber whether in city or [illegible] beginner, can afford to be [illegible] rd work of this kind is in- [illegible] plumber, not only for his [illegible] on many subjects connected [illegible] ut for use with his customers [illegible] nd confirming his arguments in [illegible] aterials and good workmanship [illegible] ains to the drainage and water [illegible] e. The mistaken economy of [illegible] ncouraging a system of reckless [illegible] ontracts at prices below the cost [illegible] s and honest labor, is doing much [illegible] e trade, and the plumber who is [illegible] ious to do good work at an honest [illegible] give him a living profit, will wel- [illegible] e an ally in the cause of reform as [illegible] ok.

[illegible] CTS FROM PRESS COMMENTS.

[illegible] *Philadelphia Evening Bulletin*'

[illegible] is a practical man, besides being well [illegible] ll the writings of those who have pre [illegible] the consideration of drainage, sewage [illegible] rvice, in town or in country houses. His [illegible] hat every builder every plumber, every [illegible] ver, and especially every man who wants [illegible] his family a healthful abode, should pos- [illegible] dy. It is much the best and most compre- [illegible] the many that have appeared relating to [illegible] bject."

[illegible] the "Chicago Medical Journal and Examiner."

[illegible] bject which the author sets before him is [illegible] essed by the title of the book, and whether [illegible] to its chapter on sewer gas, waste and [illegible], traps and seals, and the ventilation of soil [illegible] chemistry of plumbing or sanitary condi- [illegible] drainage of country houses, we find that the [illegible] is at once comprehensive, broad, concise, and [illegible] ly practical."

From the "Pittsburgh Chronicle."

[illegible] able and accomplished author has here done [illegible] ce to suffering mankind for which we hope he [illegible] e amply rewarded. The volume is an author- [illegible] e and exhaustive treatise on the subjects of [illegible] age and water supply, and all matters related [illegible] to, whether immediate or remote."

From the "Scientific American."

The book is excellently well written, is replete [illegible] a valuable information, and will prove, we do not [illegible] bt, a standard guide to the trade to which it is [illegible] re particularly addressed, as well as a useful work [illegible] reference for all interested in the very vital ques- [illegible] ns involved in the science of sanitary engineering."

From the "New York World."

"A very comprehensive and thorough exposition of [illegible] he whole subject of house drainage and water ser- [illegible] ice. The excellent purpose of the author seems to [illegible] have been realized in a very satisfactory way, and it [illegible] is evident that such a work will be of value to many classes of readers."

From the "Journal of the Franklin Institute."

"The thorough and comprehensive character of this work must commend it to all interested in the mechanics of hygiene."

From "The Sanitarian."

"'House Drainage and Water Service' is the appropriate title of the best summary of the mechanics of hygiene hitherto published in the United States. Mr. Bayles, the author of the work, is favorably known as editor of *The Metal Worker*, a paper justly noted for its eminently practical and useful character to the trade which it represents, and which has afforded the editor thereof excellent opportunities for thorough familiarity with the subjects which he has embodied in this treatise. He is also one of the most active members, and has for several years been one of the chief contributors to the proceedings of the New York Public Health Association, which has brought him into free intercourse with persons engaged in the practical application of hygiene. These opportunities and facilities seem to have suggested the scope of the work before us. The work is worthily gotten up, on good paper, good illustrations, and well bound; and we take much pleasure in commending it."

Sent postpaid on receipt of price, $3.

DAVID WILLIAMS, Publisher,
83 Reade street, New York.

Published Monthly by DAVID WILLIAMS.
New York, 83 Reade Street.
PHILADELPHIA, 220 South Fourth St.
PITTSBURGH, 77 Fourth Avenue.
CINCINNATI, Merchants' Exchange,
CHATTANOOGA, Eighth and Market Sts.
SUBSCRIPTION One Dollar a year, postpaid.
AGENTS WANTED at every Post Office in the U. S. Send for circular of club rates.

CARPENTRY AND BUILDING

A MONTHLY JOURNAL DEVOTED TO
All Branches of the Building Trades.
PROFUSELY ILLUSTRATED WITH ELEVATIONS, PLANS AND DETAIL DRAWINGS TO SCALE.

SUBSCRIPTION, ONE DOLLAR PER YEAR.

It is eminently practical, and treats only of those subjects which interest the trades addressed. No expense or labor is spared to make it of real value to all intelligent mechanics in these trades.

Among the subjects discussed may be mentioned Carpentry and Joinery, Framing and Construction, Architecture, Masonry, Drafting, Cabinet Work, Roofs and Cornices, Heating and Ventilation, Plumbing and Gas Fitting, Painting, Iron Work and Plastering.

Its department of correspondence being a convenient means of intercommunication between mechanics in different sections of the country, and presenting a record of experience of the ablest mechanics, has become a leading feature of the publication, and one of the greatest usefulness and interest. This department, as well as the paper throughout, is amply illustrated.

Its illustrations, which are line engravings, are everywhere admired for their clearness and beauty, and are certainly better suited to the purpose than any ever before given to the Carpentry and Building trades.

Its character and price, with the efforts we have made to introduce it, have gained for it a large circulation and influence, making it a very valuable advertising medium for all tools, implements and articles used by Woodworkers, or which enter into the construction of buildings.

Its advertising rates have been fixed at as low a figure as is consistent with profit, and will be strictly adhered to. This has for years been our plan with *The Iron Age* and *The Metal Worker*, and experience has proved its superiority over the more common method of fixing prices so high as to allow a large, and often very uncertain, discount.

Volume I, 1879, *bound in cloth, postpaid*	$2.25
Volume I, 1879, *loose numbers, postpaid*	1.00
Stamped cloth covers, ready for bookbinder, postpaid	1.00
Self-Binders, half cloth, postpaid	1.00
Self-Binders, full cloth, postpaid	1.25

CARPENTRY AND BUILDING being printed from electrotype plates, back numbers, singly or in sets, can be furnished at any time, and will be sent postpaid to any address upon receipt of the regular price.

Address, DAVID WILLIAMS, Publisher,
83 Reade Street, New York.

Write for free SPECIMEN COPY.

NEW YORK STATE AGRICULTURAL WORKS, Established 1830.

WHEELER & MELICK COMPANY,

Patentees and Manufacturers of

Railway & Lever Horse Powers, Wheeler's Vibratory Threshers & Cleaners.

LA DORR'S



Jointed Pulverizing Harrow.



Eagle Rake.

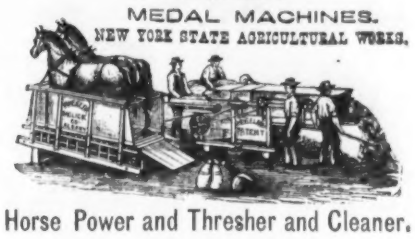
Ellis's One and Two-Horse Threshers and Cleaners, Threshers and Shakers, Straw-Preserving Rye Threshers, Eagle Hand and Horse Dumping Rake; La Dorr's Jointed Pulverizing Disc Harrow, the only Disc Harrow that will thoroughly pulverize the ground, leave it smooth and cover the seed; Tolley's Champion One and Two-Horse Cultivator with patent screw teeth Steam Engines, Dog and Pony Powers, Wood Sawing Machines, Shingle Machines; La Dorr's Disc Corn Cultivator, unequalled by anything for cultivating corn or any rowed crop. All machines made of first-class material, and are the best machines for export and home trade. Having been established nearly fifty years, our reputation is second to none.

Send for illustrated circular and report of Centennial Trial.

WHEELER & MELICK COMPANY,

Albany, N. Y., U. S. A.

WHEELER'S MEDAL MACHINES. NEW YORK STATE AGRICULTURAL WORKS.



Horse Power and Thresher and Cleaner.



Tolley's Champion Cultivator.

THE HARTFORD MACHINE SCREW CO.,

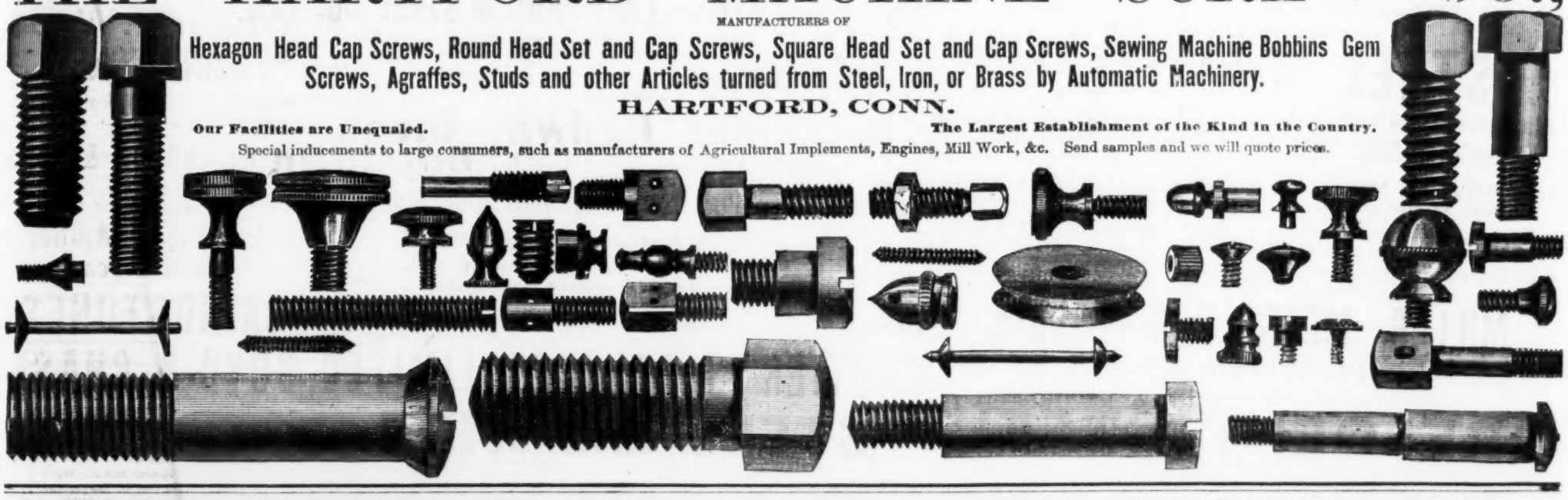
MANUFACTURERS OF

Hexagon Head Cap Screws, Round Head Set and Cap Screws, Square Head Set and Cap Screws, Sewing Machine Bobbins Gem Screws, Agraffes, Studs and other Articles turned from Steel, Iron, or Brass by Automatic Machinery.

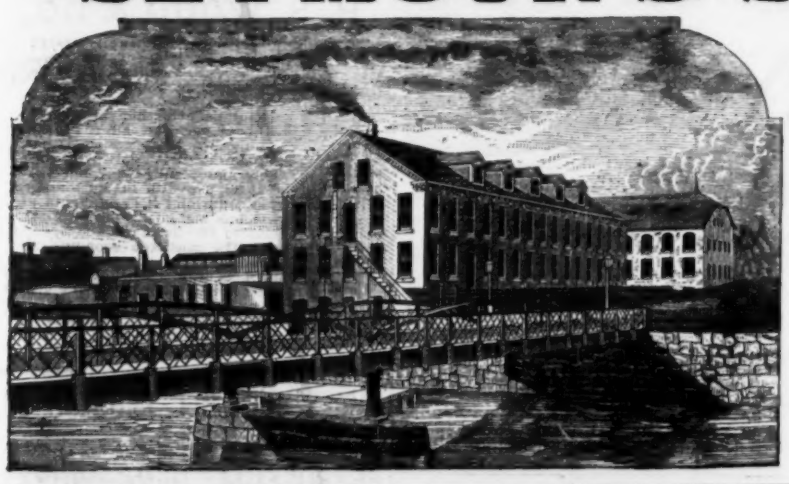
HARTFORD, CONN.

Our Facilities are Unequaled. **The Largest Establishment of the Kind in the Country.**

Special inducements to large consumers, such as manufacturers of Agricultural Implements, Engines, Mill Work, &c. Send samples and we will quote prices.



SEYMOUR'S SHEARS AND SCISSORS.



HENRY SEYMOUR CUTLERY CO.,

MANUFACTURERS OF

Full Nickel Plated and Maroon Japan Handle

Shears & Scissors

EVERY PAIR WARRANTED.

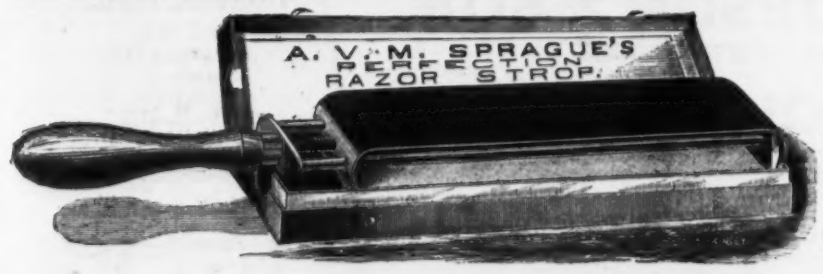
Sold by Hardware dealers throughout the country.

Salesrooms,

84 and 86 Chambers Street, New York City.

Manufactory, HOLYOKE, MASS.





For prices address

Manufacturers of Hardware Specialties and Razor Strops.

SPRAGUE'S

Perfection Razor Strop.

Made upon the belt principle so universally approved by barbers—one side being of canvas, filled with a preparation of the Oxide of Tin (the finest and sharpest cutting agent known) the other side being of genuine Russia leather, prepared especially for these goods. We recommend this Strop for its excellence and elegance. Each one is enclosed in a hinged case.



SPRAGUE'S IMPROVED COMBINATION RAZOR STROP.

This Strop is better known and commands a larger sale than any Strop on the market, but for the benefit of those who may be unacquainted with it, we will say it has four sides, two of which are of leather, arranged upon the principle of the extensible belt; the other sides are hones of different degrees of fineness, the whole forming a perfect combination of Hone and Finishing Razor Strop. Our present manufacture of this particular Strop is so much superior to our previous products, that we feel a special pride in offering them even to their old friends.

THE SPRAGUE NOVELTY WORKS, 15, 17 & 19 North Water Street, ROCHESTER, N. Y.

SCUTT'S PATENT FOUR-POINTED STEEL BARBED CABLE FENCE WIRE.

The cable is formed in the same manner as the great cables used in bridges, and has a tensile strength double that of any twisted wire. It is the only barbed wire so manufactured. Both wire and barb material are manufactured especially for our use from the finest grade of Siemens-Martin steel. Our wire offers double the protection afforded by any two-pointed barb, each rod giving 128 points, while two-pointed barbs give but 64. It is the most attractive in appearance, and the best selling wire in the market, and, by actual tests, the strongest, lightest and consequently the cheapest.

We manufacture under license from the Washburn & Moen Mfg. Co., and **all danger of law suits is avoided** in the purchase of our goods. We manufacture both painted and galvanized.

The only **Solid Steel Four-pointed Barb.** Send for circulars and price list.

H. B. SCUTT & CO., Buffalo, N. Y.

BAEDER, ADAMSON & CO.,

Manufacturers of SAND & EMERY PAPER & EMERY CLOTH.

(Also in Rolls, for machine work.)

Ground Emery, Corundum & Flint, Glue & Curled Hair, Hair Felt, & Felting for Covering Boilers, Pipes, &c., Cow Hide Whips.

Stores: PHILADELPHIA, 730 Market St., NEW YORK, 67 Beekman St., BOSTON, 143 Milk St., CHICAGO, 152 Lake St.

TACKLE BLOCKS

BURR & CO.,

Manufacturers of Waterman and Russel's

Patent Iron Strapped Blocks.

Also, Manufacturers of

ROPE STRAPPED BLOCKS.

31 Peck Slip, New York.



WM. ESTERBROOK,

Wholesale Manufacturer of

Coal Hods,

311 Cherry St., PHILADELPHIA.

NATIONAL STEAM PUMP.

Adapted to every possible Duty.

Send for Illustrated Catalogue.

WM. E. KELLY,

New Brunswick, N. J.

New York Salesroom, 40 Cortlandt St.

Steel.

R. H. WOLFF & CO.,

MANUFACTURERS, IMPORTERS, EXPORTERS & GENERAL MERCHANTS

MANUFACTURERS OF

CAST STEEL WIRE for all Purposes, Special Wire, Market Steel Wire, Prime Coppered Spring Wire, and of all Kinds of Furniture Springs, &c.

Importers of IRON & STEEL, WIRE RODS, &c

Sole Agents for COCKER BROS., Limited, Sheffield, England.

MANUFACTURERS OF

Cast Steel, Wire, and "Meteor" Wire Plates.

Sole Agents for "PR. HOMO" Dec. Cast Steel, Gun Barrels, Moulds and Ordnance.

EXPORTERS AND GENERAL MERCHANTS.

Direct all communications to

Works, Peekskill, N. Y. Office and Warehouse, 46 Cliff St., New York.

F. W. MOSS,

Successor to JOSHUA MOSS and GAMBLE BROS.

80 JOHN ST., NEW YORK.

STEEL AND FILES,

Hammers, Anvils, Vises, Blacksmiths' Tools.

WARRANTED CAST STEEL. Specially adapted for Dies, Punches, Turning Tools, Drills, &c.

ALSO, THE WORLD-RENOWNED

IMPROVED MILD CENTERED CAST STEEL.

Specially adapted for Taps, Reamers, Milling Tools, &c. *Warranted not to crack in hardening Tools of any size.*

SHEET, GERMAN, MACHINERY, SPRING AND EVERY OTHER DESCRIPTION OF STEEL.

Phila.—J. S. Watson & Son, Agents, 512 Commerce St.,

Franklin Works, Wadsley Works, Walkley Works, Sheffield, England.

MILLER, METCALF & PARKIN,

Pittsburgh, Pa.,

Manufacturers of

CRESCENT STEEL,

In Bars, Sheets, Cold-Rolled Strips, &c.

Polished, Compressed Drill Rods and Wire,

Warranted equal to any imported in *quality, finish and accuracy.*

Also Common Grades.

Established 1810.

J. & RILEY CARR,

SHEFFIELD, ENGLAND.

Manufacturers of the "Celebrated

"DOG BRAND" FILES.

Also of Superior

STEEL



For Drills, Cold Chisels, Tools, Taps, Dies, &c.

COLD ROLLED STEEL for Clock Springs, Corsets, &c.

SHEET CAST STEEL for Springs, Saws, Welding and Stamping Cold, &c.

GERMAN, MACHINERY, ENGLISH AND SWEDES SPRING STEEL,

And all other descriptions for machinists and agricultural purposes.

Warehouse, 30 Gold Street, New York.

Near John Street. HENRY MOORE, Agent.

Cleveland Rolling Mill Co.,

Manufacturers of

BESSEMER STEEL

AND

Iron Rail and Fastenings,

SPRING STEEL

AND

WIRE OF ALL KINDS,

Steel Horse Shoes, Tire, Axles and other Forgings,

Boiler Plate, Galvanized and Black Sheet Iron, Corrugated Roofing and Siding of Siemens-Martin, Bessemer Steel and Iron.

made from our own Lake Superior Ores. *CLEVELAND, OHIO.*

AGENTS FOR THE UNION STEEL SCREW CO.

H. CHISHOLM, President Cleveland, Ohio. A. B. STONE, Vice-Pres., No. 52 William St., New York.

GEO. SANDERSON & CO.,

MANUFACTURERS AND

Importers of STEEL,

Removed to 30 Gold Street, New York.

Particular attention is paid to quality and temper for FILES, SAWS, EDGE TOOLS, TABLE and POCKET CUTLERY, TOOLS, TAPS and DIES; also for COLD ROLLED STEEL for CLOCK SPRINGS, CORSET CLASPS, &c.

A Large Assorted Stock of JOHN ROTHERY'S FILES always on hand.

Steel.

NEWARK STEEL WORKS.

BENJAMIN ATHA & CO.,

Manufacturers of

BEST REFINED CAST STEEL

And grades of Steel specially adapted for Lathe Tools, Chisels and Taps and Dies.

Warranted most superior for TOOLS AND GRANITE ROCK DRILLS.

A full assortment of this universally approved OLD BRAND and other Steels for sale by

EDWARD FRITH & SON, Agents,

No. 241 Pearl St., New York.

LABELLE STEEL WORKS.

SMITH, SUTTON & CO.,

MANUFACTURERS OF ALL KINDS OF

STEEL.

Also Springs, Axles, Rake Teeth, &c.

OFFICE & WORKS, Ridge, Lighthill & Belmont Sts., & Ohio River, Allegheny.

Post Office Address, Pittsburgh, Pa.

Represented at Boston by WETHERELL BROS., 21 Oliver St.; at Milwaukee by JOHN PRITELAFF, 43 to 49 West Water St.; at Chicago by S. D. KIMBARK, 80 to 84 Michigan Ave.

ALBANY & RENSSELAER IRON & STEEL CO.,

Troy, N. Y.,

Office in New York City, 56 BROADWAY.

MANUFACTURERS OF

Bessemer Railway Steel,

MERCHANT BARS, TIRE AND SHAFTING,

Railroad Iron, Pig Iron, Merchant and Ship Iron,

AGENCIES IN BOSTON AND PHILADELPHIA.

This Advertisement is Changed Every Week.

D. G. GAUTIER, Chairman D. J. MORRELL, Treasurer. CHAS. DOUGLASS, Gen'l Supt.

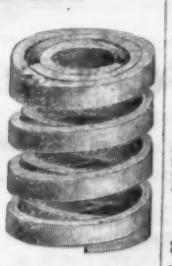
GAUTIER STEEL CO., LIMITED,

STEEL and WIRE.



Carriage and Railroad

SPRINGS.





WORKS, JOHNSTOWN, PENN.

Eastern Warehouse, 93 John St., N. Y.; Phila. Warehouse, 515 Commerce St.

FRANCIS HOBSON & SON,

97 John Street, NEW YORK,

Sole Manufact'rs of "CHOICE" Extra Cast Steel.

Manufacturers of all Descriptions of Steel.

Manufacturers of Every Kind of Steel Wire.

Don Works, Sheffield, England.

CHAS. HUGILL, Agent.

S. & C. WARDLOW,

Sheffield, England,

Manufacturers of the Celebrated

Cast and Double Shear

STEEL.

In Bars, Sheets and Coils, for fine Pen and Pocket Cutlery, Table Knives, Mining Tools, Dies, Files, Clock and other Springs, and Tools of every variety.

Warehouse, 95 John Street, New York.

WILLIAM BROWN, Representative.

FOREST CITY STEEL CO.,

Manufacturers of Best Quality

Crucible Steel for Drills, Taps, Dies, Tools, Mill Picks, &c.

Testimonial of D. J. Jones, Roll Turner, Cleveland Rolling Mill Co.

"I have been testing the steel on chilled iron rolls along with the best English and American steels, and find it superior to any of them in every respect."

Samples furnished for trial. Quality guaranteed equal to any.

No. 13 Detroit Street, Cleveland, Ohio.

Steel.

R. MUSHET'S

Special Steel

FOR

LATHES, PLANERS, &c.

Turns out at least **double work** by increased speed and feed, **and cuts harder metals** than any other Steel. Neither hardening nor tempering required.

Sole Makers,

SAMUEL OSBORN & CO.,

Sheffield, England.

Represented in the United States by

RANDALL & JONES,

10 Oliver Street, BOSTON.

STEELINE.



Used for refining and tempering all kinds of Steel Tools.

Increases their durability at least fivefold.

Secures absolute safety from cracking.

Send for circular to

BAUER & CO.,

96 Greenwich Ave., N. Y.

Emery, Grindstones, &c.

Walter R. Wood,

GRINDSTONES.

Berea, O., Nova Scotia, & other brands

283 and 285 Front Street, New York.

WORTHINGTON & SONS,

North Amherst, Ohio.

Manufacturers of

Lake Huron Amherst and Berea

GRINDSTONES.

BOYD & CHASE,

The largest manufacturers in the world of

OIL 

STONE

Of all description.

107th Street and Harlem River,

Send for Illustrated Price List. NEW YORK.

H. S. WOOD & CO.,

Manufacturers of Berea, O., Black River, O., Lake Huron, Mich.,

Importers of Newcastle, Eng., Wickersley, Eng., Nova Scotia,

GRINDSTONES,

33 West and 58 Washington Sts., N. Y.

ASHLAND EMERY CO.

CHARLES ALDEN, MANAGER.

Importers and Manufacturers of PURE

TURKISH EMERY

A. A. IRVINE & CO., Agents,

14 MURRAY ST., NEW YORK.

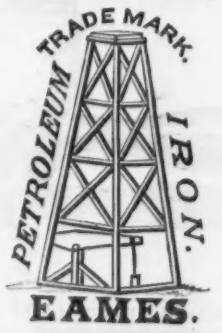
Send for quotations and samples.

EAMES' OIL FUEL PROCESS CO.

EAMES'

PETROLEUM IRON WORKS,

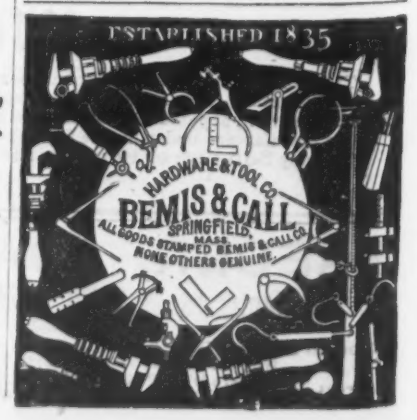
Titusville, Penn.,



Manufacturers of

Petroleum Iron Blooms.

These Blooms are made from selected wrought scrap with petroleum fuel; can be used for making crucible steel, tack plate, horse shoes, boiler flange iron, &c., or for any purpose requiring a neutral, tough and uniform iron.



Steel.

THE EDGAR THOMSON STEEL CO.,
LIMITED.

MANUFACTURERS OF



General Office and Works at Bessemer Station (Penn. R. R.), Allegheny County, Pa.

New York Office, 57 Broadway.

The members of the Edgar Thomson Steel Company, Limited, have had large experience in manufacturing and in railway management; their works are the most complete in the world, with all the late improvements, and are located in the best Bessemer metal district in the United States, and their managing officers are experienced in the manufacture of Bessemer Steel.

The Company warrants its rails equal in quality to any manufactured in the United States.

Rails of any weight or section furnished on short notice. Orders for trial lots solicited.

Branch Office and P. O. Address, No. 48 Fifth Ave., Pittsburgh, Pa.

THOS. M. CARNEGIE, Chairman. **D. A. STEWART, Sec'y and Treas.**

JOHN WILSON'S CELEBRATED
BUTCHERS' KNIVES,
BUTCHERS' STEELS,
AND
SHOE KNIVES.



THE TRADE MARK, IN ADDITION TO THE NAME, IS STAMPED UPON EVERY ARTICLE MANUFACTURED BY

JOHN WILSON.

GRANTED A.D. 1766, BY THE CORPORATION OF CUTLERS OF SHEFFIELD, AND PROTECTED BY ACT OF PARLIAMENT.

BUYERS ARE SPECIALLY CAUTIONED AGAINST IMITATIONS OF THE MARK, AND THE SUBSTITUTION OF COUNTERFEITS BEARING THE NAME, "WILSON," ONLY.

Works:—SYCAMORE STREET, SHEFFIELD. ESTABLISHED in the Year 175'

North Chicago Rolling Mill Co.

ESTABLISHED 1857. CAPITAL, $3,000,000. INCORPORATED 1869.

Works at Chicago, Ill., and Milwaukee, Wis.

MANUFACTURERS OF

MERCHANT BAR, FISH PLATES, PIG METAL, IRON RAILS & BESSEMER STEEL RAILS.

CAPACITY OF WORKS.

Fish Plates	20,000 tons.
Merchant Bar	40,000 "
Pig Metal	50,000 "
Iron Rails	80,000 "
Steel Rails	50,000 "
Total Capacity per year	280,000 "

OFFICES:

17 Metropolitan Block, Chicago, Ill.
37 Mitchell Block, Milwaukee, Wis.

O. W. POTTER, President, CHICAGO.
S. P. BURT, Vice-President, NEW BEDFORD.
S. CLEMENT, Treasurer, MILWAUKEE.
R. C. HANNAH, Secretary, CHICAGO.

PYROLUSITE MANGANESE COMPANY,
MINERS, DEALERS AND EXPORTERS OF HIGH TEST

Crystallized Black Oxide of

Manganese
IN CRUDE STATE.

Suitable for the manufacture of Ferro-Manganese, Spiegeleisen, Bessemer Pig, &c. Also, fine ground and granulated, especially prepared for

STEEL, GLASS, PAINT, VARNISH and DRYER MAKERS, OIL BOILERS, &c.

MANUFACTURERS OF SUPERFINE FLOATED

Standard Barytes, Gritless Ochre, Borate of Manganese, &c.

Office, 54 Cliff Street, New York.



LIGHTNING HAY KNIVES,
WEYMOUTH'S PATENT.



This knife is the best in use for cutting down hay and straw in mow and stack, cutting fine feed from bale, cutting corn stalks for feed, cutting peat and ditching marches.

The blade is best cast steel, spring temper, easily sharpened, and is giving *universal* satisfaction. A few moments' trial will show its merits, and parties once using it are unwilling to do without it. Its sales are fast increasing for export as well as home trade, and it *seems destined* to take the place of all other Hay Knives.

They are nicely packed in boxes, one dozen each, of 50 lbs. weight, suitable for shipping by land or water to any part of the world.

Manufactured only by

HIRAM HOLT & CO.,

East Wilton, Franklin Co., Maine.

For sale by the Hardware Trade generally.

Philadelphia Smelting Co.,
S. E. Cor. Twelfth and Noble Sts., PHILADELPHIA.

GENUINE BABBITT,

Guaranteed at a speed of 10,000 a minute, and at any pressure for 10 years.

ALL GRADES OF ANTI-FRICTION METALS.

DEOXIDIZED BRONZE,

Superior to Phosphor Bronze or any other alloy of Copper and Tin for Machinery Journals.

Solders, Stereotype Metal, Gas and Steam Fittings and Fixtures, Brass and Composition Castings.

Send for circulars.

WIRE NAILS

French Points, Window Shade Nails,

Upholstering, **WAGON NAILS,** Molding Nails

(Sample Cards sent on application.)

Electrotype, Roofing Nails,

Barbed Caster Nails.

Veneer Nails, Label Tacks and small Nails of all kinds, Cabinet Nails, Barbed Lock Nails, Cigar Box Nails, &c., &c., put up in bulk, 5 lb. packages, 1 lb. papers, or as wanted.

AMERICAN WIRE NAIL CO.

Factory, Fifteenth and Madison Sts. - - - - - COVINGTON, KY.

ESTABLISHED IN 1859.

THE IRONMONGER AND METAL TRADES ADVERTISER

PUBLISHED EVERY SATURDAY.

THE OLDEST AND CHIEF REPRESENTATIVE OF THE IRON, HARDWARE AND METAL TRADES.

OFFICE: 44a CANNON STREET, LONDON, E. C.

ADVERTISEMENTS AND SUBSCRIPTIONS ARE RECEIVED AT THE VARIOUS OFFICES OF "THE IRON AGE," NAMELY:

NEW YORK OFFICE: DAVID WILLIAMS, Publisher of *The Iron Age*, 83 Reade street.

PITTSBURCH OFFICE: 77 Fourth Avenue—JOS. D. WEEKS, Manager and Associate Editor.

PHILADELPHIA OFFICE: 220 South Fourth Street—THOMAS HOBSON, Manager.

CINCINNATI OFFICE: Builders' Exchange—T. T. MOORE, Manager.

SOUTHERN OFFICE: Cor. Eighth and Market Streets, Chattanooga, Tenn.—S. B. LOWE, Manager.

SPECIAL FEATURES.

Notes of Novelties.—This is a department of the journal always watched with interest by the trade, as it contains an account, from week to week, of the novelties which manufacturers and inventors are introducing to the notice of the trade. These articles are freely illustrated.

Special Correspondents.—The *Ironmonger* has a deserved reputation for its special correspondence from all the principal Continental, British and manufacturing centers. The writers are gentlemen holding important positions in the districts with which they are connected, and possess facilities for acquiring information specially suited for the columns of the *Ironmonger*. ***The Week, Legal News, Trade Notes, Bankruptcies, Foreign Notes, Colonial Jottings, Merchants' Circulars, Imports and Exports, &c.,*** are each departments of the journal, containing a digest of all matters of direct interest to the Iron, Hardware and Metal Trades. In addition to the above, there is a carefully classified list of Patents, together with Editorial Notes, French, Belgian and other Special Correspondence.

SUBSCRIPTIONS

to the *Ironmonger and Metal Trades' Advertiser*, with which is sent every fourth week the Foreign Supplement (see below), may commence from any date, but are not received for less than a year complete. The rate is $5 per annum, inclusive of postage to any part of the world outside Great Britain. To every subscriber is presented, free, in the course of his year, a handsome and useful ***Ironmongers' Diary and Text Book,*** a work sold to non-subscribers at 75 cents.

ADVERTISEMENTS

are inserted in the *Ironmonger and Metal Trades Advertiser* at the subjoined rates, from which no variation can be made on any ground whatever.

Size of Page—Nine Inches Deep by Six Inches Wide.

One Advertisement of every Series of 13 Monthly, 27 Fortnightly, or 53 Weekly, will be inserted in the Ironmongers' Diary and Text Book, published toward the end of each year, and presented to every Subscriber.

	53 INSERTIONS, each net.	27 INSERTIONS, each net.	13 INSERTIONS, each net.	7 INSERTIONS, each net.	3 INSERTIONS, each net.	2 INSERTIONS, each net.	1 INSERTION, net.
	Gold.	Gold.	Gold.	Gold.	Gold.	Gold.	Gold
One page	$17.50	$18.75	$20.00	$22.50	$25.00	$30.00	$35.00
Two-thirds page	13.15	14.10	15.00	16.90	18.75	22.50	26.25
Half page	9.75	10.25	11.00	12.40	13.75	16.50	19.25
One-third page	7.00	7.50	8.00	9.00	10.00	12.00	14.00
Quarter page	5.60	6.00	6.40	7.25	8.00	9.60	11.20
One-sixth page	3.95	4.25	4.50	5.10	5.65	6.75	7.75
One-eighth page	3.15	3.40	3.60	4.10	4.50	5.40	6.25
One-sixteenth page	1.75	1.90	2.00	2.25	2.50	3.00	3.50

SPECIAL ISSUES.

In April and October of each year there is published a Special Issue, the circulation of which is not less than **Twelve Thousand (12,000)** copies

THE IRONMONGERS' DIARY AND TEXT BOOK.

This is an annual, **presented free to every Subscriber to the IRONMONGER AND METAL TRADES' ADVERTISER.** It contains a large number of ruled skeleton pages for diary and other entries, and in addition much useful reference information, varied from year to year. It is handsomely bound in cloth, gilt; and as copies are used in thousands of establishments for a whole year, it is obviously a medium of exceptional value for advertisements. Sold to non-subscribers at 75 cents.

THE FOREIGN SUPPLEMENT

is published every fourth week in connection with the extensive and world-wide circulation of the *Ironmonger* itself. The dates of its publication in 1879 will be as follows:

JANUARY 11, FEBRUARY 8, MARCH 8, APRIL 5, MAY 3 and 31, JUNE 28, JULY 26, AUGUST 23, SEPTEMBER 20, OCTOBER 18, NOVEMBER 15, DECEMBER 13.

This Supplement is published in

FIVE LEADING COMMERCIAL LANGUAGES

of the world, including English, and is sent to all the countries where they are spoken, thus placing the contents of the *Ironmonger* not only within reach out in the native language of eighty millions of *German*, forty-two millions of *French*, twenty-eight millions of *Italian*, and fifty-one millions of *Spanish* speaking people; or, in all, over two hundred millions of inhabitants in the principal nations where the best purchasers of manufactured goods are to be found.

Advertisements are inserted in *any* language at the following

MODERATE TARIFF.

Size of Page—13¼ Inches Deep by 9½ Inches Wide.

	13 INSERTIONS, each net.	7 INSERTIONS, each net.	3 INSERTIONS, each net.
	Gold.	Gold.	Gold.
One page	$30.00	$33.75	$37.50
Two-thirds page	22.00	24.75	27.50
Half page	17.00	19.15	21.25
One-third page	12.50	14.10	15.65

	13 INSERTIONS, each net.	7 INSERTIONS, each net	INSERTIONS each net.
	Gold.	Gold.	Gold.
Quarter page	$10.00	$11.25	$12.50
One-sixth page	7.50	8.45	9.40
One-eighth page	6.20	7.00	7.75
One-sixteenth page	3.20	3.40	4.00

Advertisers will do well to use Illustrations freely. Where economy of space is an object, a left page illustrated and described in one language, can be suitably described in four or more languages on the opposite or right page without illustrating.

THE WHOLE FOREIGN HARDWARE TRADE,

so far as our experience of twenty years is concerned, will be covered by THE FOREIGN SUPPLEMENT at least twice a year. Thus a Price List or Advertisement inserted in the *Ironmonger* and FOREIGN SUPPLEMENT is a strikingly powerful and most efficient way of publicity not to be compared with any of the other ordinary channels of communication.

B. KREISCHER & SONS,

FIRE BRICK.

BEST AND CHEAPEST.

Established 1845.

Office foot of Houston Street, East River, NEW YORK.

NEWTON & CO.,

ALBANY, N. Y., Manufacturers of

FIRE BRICK

Stove Linings,

Range and Heater Linings

Cylinder Brick, &c., &c.

M. D. Valentine & Bro

Manufacturers of

FIRE BRICK

And Furnace Blocks

DRAIN PIPE & LAND TILE.

Woodbridge, - - - N. J.

BORGNER & O'BRIEN,

Manufacturers of

FIRE BRICK

AND

Edge Pressed Furnace Blocks,

CLAY RETORTS, TILES, &c.,

Twenty-third Street,

Above Race, *PHILADELPHIA.*

Twenty years' practical Experience.

PERTH AMBOY TERRA COTTA CO.,

Successors to

A. HALL & SONS, Perth Amboy, N. J.,

ARCHITECTURAL TERRA COTTA

AND

FIRE BRICK.

170 Broadway, NEW YORK.

Brooklyn Clay Retort

AND

FIRE BRICK WORKS.

Manufacturers of Clay Retorts, Fire Bricks, Gas House and other Tile, Cupola Brick, &c. Dealers in and Miners of Fire Clay and Fire Sand. Clay bank at Burt's Creek, New Jersey. Manufactory: Van Dyke, Elizabeth, Richards and Partition Sts., Brooklyn, N. Y. Office No. 83 Van Dyke St.

Watson Fire Brick Manufactory

ESTABLISHED 1836.

OHN R. WATSON, Perth Amboy, New Jersey.

Manufacturer of

FIRE BRICK,

For Rolling Mills, Blast Furnaces, Foundries, Gas Works, Lime Kilns, Tanneries, Boiler and Grate Setting, Glass Works, &c.

FIRE CLAYS, FIRE SAND, AND KAOLIN FOR SALE.

HENRY MAURER,

Proprietor of the

Excelsior Fire Brick & Clay Retort Works,

Manufacturer of FIRE BRICK, HOLLOW BRICK AND CLAY RETORTS.

WORKS PERTH AMBOY, NEW JERSEY

Office & Depot: 418 to 429 East 23d St., N. Y

TROY FIRE BRICK WORKS

Troy, N. Y.,

JAMES OSTRANDER & SON,

ESTABLISHED 1848,

Manufacturers of

FIRE BRICK,

Tuyeres, Tiles, Blast Furnace Blocks, etc. Miners and Dealers in Woodbridge Fire Clay and Sand, and Staten Island Kaolin.

Established 1864.

GARDNER BROTHERS,

MANUFACTURERS OF

STANDARD SAVAGE

Fire Brick, Tile & Furnace Blocks,

OF ALL SHAPES AND SIZES.

Clay Gas Retorts and Retort Settings,

AND

Miners and Shippers of Fire Clay.

OFFICE: 376 Penn Ave., Pittsburgh, Pa.

WORKS: Mt. Savage Junction, Md., and Lockport, Pa

HALL & SONS,

FIRE BRICK,

Buffalo, N. Y.

MILLER'S BRICK PRESSES

(Established 1844),

FIRE and RED BRICK,

And Brickmakers' Tools in General.

SAML. P. MILLER & SON,

309 South 5th St., Philadelphia.

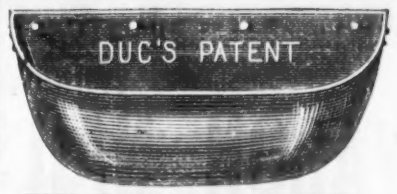
W. & J. TIEBOUT,

Manufacturers of

Brass, Galvanized & Ship Chandlery Hardware,

No. 390 Pearl Street, New York.

DUC'S IMPROVED ELEVATOR BUCKET.



THE STORE-HOUSE BUCKET.
(Partial straight front.)
In 12 in., 14 in., 16 in. and 17 in. Sizes.

Made of Best Charcoal Stamping Iron.
No Corners to Catch.
Light Running and Very Durable.
The only Scientifically Constructed Elevator Bucket in the Market.

T. F. ROWLAND,
Sole Manufacturer,
CONTINENTAL WORKS, Brooklyn, E. D., N. Y.



The MILL BUCKET.
In 3½ in. to 10 in. Sizes.

Send for Circular.

NICHOLSON FILE CO.,

Manufacturers of

FILES AND RASPS.

ALSO

Filers' Tools & Specialties.

Manufactory and Offices at Providence, R. I.

The following space will be used in illustrating our specialties, the matter being changed weekly.

IMPORTANT.

Our Mill Saw Files undoubtedly stand in the estimation of mill men as the best article ever put upon the American Market, having almost entirely displaced the foreign article. And why? Because they are made from the best of material and with a care and determination to make a better article than can be found elsewhere: and **it is our firm intention to continue them at the head,** and to make any and every variety of files used upon the different kinds of saws.

Our Double Cut Files, for work and endurance, as proved by our Automatic (Self-Recording) Testing Machine, will outlast any hand-cut file we can find. In filing mill saws, in almost every case the duty of a file is measureable, and hence *quality will always tell.* Is it so with the double cut? Is it not more often used for a few moments, and then thrown into a drawer or on to the bench with hammers, chisels and other tools—bruised a little—used a little—and bruised a little again—until, when a sharp file is wanted, it is useless for the purpose. And thus in most cases (unlike the *Mill File*) no comparative test has been obtained—and a greater opportunity for the exercise of prejudice left open.

The double cut files of our make have *all* the irregularities in the hight and spacing of their teeth that true economy calls for, and for actual service are really a superior file.

Our Racer Horse Rasps, and **Double Ender Sawfiles** and Handle, are both destined to take the lead, and to stand beside our other Files. They have the *points* and *real merit,* which will *tell* in the long run.

If Extra Sharp Teeth or a *superior brass file* is wanted for any purpose, try the "*Gritty Liquid Whetting Process.*"

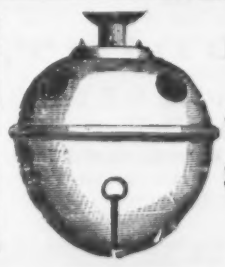
Don't Be Deceived by those who talk Hand Cut Files! Most of them are to-day introducing machinery as fast as they *know how,* and can find the means to do it with.

G. W. Bradley's Edge Tools.

Butchers' Cleavers,
Butchers' Choppers,
Axes and Hatchets,
Grub Hoes and Mattocks,
Mill Picks,
Box Chisels and Scrapers,
Ring Bush Hooks,
Ax Eye Bush Hooks,
Socket Bush Hooks,
Watt's Ship Carpenters' Tools,
Carpenters' Drawing Knives,
Coopers' and Turpentine Tools.

FOR SALE BY

MARTIN DOSCHER, Agent, 96 Chambers Street, N. Y.



Established 1838.

Bevin Bros. Mfg. Co.,

Easthampton, Ct.

Manufacturers of

SLEIGH BELLS

House, Tea, Hand, Gong Bell &c.

Bell Metal Kettles.

John T. Lewis & Bros

No. 231 South Front St.,

PHILADELPHIA.

JOHN T. LEWIS & BROS. WARRANTED PURE WHITE LEAD. PHILADA.

TRADE MARK.

MANUFACTURERS OF

Pure White Lead, Red Lead, Litharge, Orange Mineral, Linseed Oil,

AND PAINTERS' COLORS

Brooklyn White Lead Co.



TRADE MARK.

White Lead, Red Lead & Litharge.

89 Maiden Lane, NEW YORK.

FISHER HOWE, TREASURER.

JOHN JEWETT & SONS

Manufacturers of the well-known brand of

WHITE LEAD.

JEWETT & SONS, PERFECTLY PURE WHITE LEAD.

TRADE MARK.

ALSO MANUFACTURERS OF

LINSEED OIL.

182 Front Street, NEW YORK.

ATLANTIC WHITE LEAD. ROBERT COLGATE & CO. PURE. WARRANTED

TRADE MARK.

The Atlantic White Lead and Linseed Oil Co.,

MANUFACTURERS OF

White Lead (Atlantic), Red Lead, Litharge & Linseed Oil.

ROBERT COLGATE & CO.,

287 Pearl Street, New York



DUNBAR BROS.,

Manufacturers of

Clock Springs and Small Springs

of every description, from best Cast Steel,

BRISTOL, CONN.

Torrey's Door Springs.

P. R. DUNNE,

Manufacturer,



182 Fulton St.,

NEW YORK.

ORGANS 13 Stops, 3 set Reeds, Stool, Book, only $98. Pianos, Stool, Cover & Book only $143.75. Paper free. D. F. BEATTY, Washington, N. J.

PHILADELPHIA.

(Corrected Weekly by Lloyd, Supplee & Walton.)

Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.
Peter Wrights, ₩ lb.....10½c net
Over 250 lbs.....11 c net
Eagle (American).....90 ₩ lb—dis 20 %

Apple Parers.
Reading No. 72.....per doz $5.00 net
" No. 74..... " 6.00 net
" No. 75..... " 7.00 net
" No. 76..... " 7.50 net
Peach Parers..... " 15.00 net
Little Favorite, corer and slicer..... " 7.50 net
Lots of 10 to 25 dozen special price.

Axes.
Mann's Red Warrior.....per doz. $9.00 net
Red Indian..... " 9.00 net
Red Chieftain, bevelled..... " 9.50 net
Crown Prince..... " 9.50 net

Augers and Auger Bits.
Bates' Nut Augers.....dis 40&10 %
Cook's Augers.....dis 50 %
Watrous' Ship Augers.....dis 15 %
Benjamin Pierce Auger Bits.....dis 30&10 %
Griswold Auger Bits.....dis 40&10 %
Cook's " .....dis 50 %
Jennings' " .....dis 10, 10&10 %
Bonney's Pat. Hol. Augers, list $48 ₩ doz.....dis 40 %
Stearns' Pat. Hol. Augers, list $48 ₩ doz.....dis 25&10

Balances.
Light and Common.....dis 20&10 %

Bells.
Bevin Bros. Mfg. Co. Light Hand Bells.....dis 70 %
Swiss Pattern Hand Bells.....low list dis 50 %
Connell's Door Bells.....dis 40&10 %
Gt. Western & Kentucky Cow, new list.....dis 50&5 %

Bolt and Rivet Clippers.
Chambers' No. 1. for ¾ bolt.....each, $7.50 }
" No. 2, " ⅝ " ..... " 9.00 } dis 25 %
" No. 3. " ½ " ..... " 12.00 }

Boring Machines.
Upright, with Augers.....List $8.50 dis 40 %
" without Augers..... " 5.00 dis 40 %
Angular, with Augers..... " 10.25 dis 40 %
" without Augers..... " 6.75 dis 40 %

Bolts.—Eastern Carriage Bolts.....dis 70&5 %, cash
Philadelphia.....new list dis 60&5 %
Stanley, Wrought Shutter.....dis 50 %

Braces.—Barber's.....dis 40&5 %
Backus.....dis 50 @ 50&10 %
Spofford.....dis 50&10 %
American Ball.....dis 50 %

Butts.—Cast Fast Joint, Narrow.....dis 40&10 %
" " Broad.....dis 40, 10&10 %
Cast Loose Joint, Narrow.....dis 50&10 %
" " Broad.....dis 50&10 %
" Acorn, Loose Pin.....dis 50&10 %
" " " Jap'd.....dis 55&10 %
" Mayer's Loose Joint.....dis 55&10 %
Wrought Loose Pin.....dis 60 %
" Table Hinges and Back Flaps.....dis 55 %
" Narrow, Fast.....dis 55 %
" Loose Joint.....dis 60 %

Blind Butts.
Parker.....dis 50&10 %
Clark.....dis 50&10 %
Shepard.....dis 50&10 %
Lull & Porter.....dis 60&5&10 %
Huffer's.....dis 40 %

Chains.—German Halter and Coil, new list Oct. 22, 1879.....dis 40 @ 45 %
Galvanized Pump..... ₩ lb 10c net
Best Proof Coil Chain—English.

₩ lb	13½	10½	8¼	7¼	6¾	6¼	gold
	3-16	¼	5-16	⅜	7-16	½	in.

Chisels.—Socket Framing.....dis 65&5 %
Socket Firmer.....dis 65&5 %
Butcher's.....$5.00 to £ gold

Casters.—Bed.....dis 30&10 %
Plate.....dis 30&10 %

Coffee Mills.—Box and Side.....dis 20 %
Enterprise.....dis 20 %

Cutlery.—Walden Pocket.....new list net
Landers, Frary & Clark, J. Russell & Co., Lamson & Goodnow Mfg. Co. and Meriden Cutlery Co., Manufacturers' prices net.

Drawing Knives.
Hart Mfg. Co.'s.....dis 65&5 %
Adjustable Handle.....dis 15 %

Fry Pans.
Tinned.....dis 60 %

₩ doz.	$3.40	4.00	4.50	5.00	5.50	6.50	7.50	9.00	10.00
No.	0	1	2	3	4	5	6	7	8

Burnished.....dis 60 %

₩ doz.	$3.00	3.75	4.25	4.75	5.25	6.00	7.00	8.00	9.00
Fo...	0	1	2	3	4	5	6	7	8

Files.
Nicholson.....dis 25 %
Disston.....dis 25 %
Butcher.....$4.50 ₩
Spencer.....$4.50 @ 4.75 ₩

Fluting Machines.
Eagle—3¼ in. roll.....each, $2.15, dis 10 %
" —2¾ in. roll..... " 2.85 net
Crown—4½ in. roll..... " 3.50 }
" —3 in. roll..... " 4.00 } dis 10 %
" —2 in. roll..... " 6.50 }
Geneva Fluter.....dis 20 %
Favorite com. Fluter & Sad Iron.....₩ doz $10.50 net

Hammers.
Yerkes & Plumb's.....dis 20 %

Hatchets.
Yerkes & Plumb.....dis 33⅓ %
Hunt.....dis 20&5 %

Hinges.
Strap and T.....dis 45&10 %

Horse Nails.

	Nos.	5	6	7	8	9	10
Ausable		30	27	25	24	23	22
" Pol'd & Pt'd and Blued and Pointed,		31	28	26	25	24	23
Globe	New list.	26	23	21	20	19	18
Clinton		23	20	19	18	17	
" Polished & Pointed		23	22	20	19	18	
Southern, all sizes							₩ lb 12c. net

Discount on Ausable and Clinton, 20 %; Globe, 10%

Locks and Knobs.
Branford.....55&2 %
Gaylord Cabinet.....dis 25&2 % c ah
American Padlocks.....dis 10&5 % cash
Scandinavian Padlocks.....dis 50&10 %

₩ doz.	$5.00	5.50	6.50	7.50	8.50	10.00	12.50	} dis 50 %
No.	57	58	59	60	61	62	63	
₩ doz.				$18.00	26.00		33.00	} dis 50 %
No.				64	65		66	

Lanterns.
Square Candle and Oil.....₩ doz!
Tubular.....No. 0, $8.65; No. 1, $10.15 ₩ doz net
Guards, 35 cents extra per doz. net.

Lawn Mowers.—Pennsylvania.....dis 30&10 %
Philadelphia.....dis 30&10 %
Excelsior.....dis 30&10 %

Lawn and Garden Pumps.
Holland Patent.....List $5.00 dis 20 %

Matlocks.
Long and Short Cutter.....new list
Pennsylvania Pattern.....per doz

Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets.....dis 20 %
Stebbins' Gates.....dis 55&10 %
Lincoln's " .....dis 55&10 %
Landers, Frary & Clark's Petroleum.....dis 20&10 %
Brass Liquor Cocks.....dis 35 %
Cork Lined " .....dis 70&10 %

Meat Cutters.—Dixon's.....dis 25 %
Woodruff.....dis 25 %
Stowe.....dis 25 %
Hale's.....new list, dis 30, 2&10 cash
American.....dis 25 %
Stuffers.....dis 25 %
Enterprise Stuffers.....dis 20 %

Planes.—Ohio Tool Co.....dis 30 %
Scioto.....dis 40 % } 10 % cash
Auburn.....dis 30 % } in 10 days.
New York Tool Co.....dis 40 %
Bailey.....dis 25&10 %

Plane Irons.—Ohio Tool Co.....dis 10&10 %
Butcher's.....£, $4.50

Plumbs and Levels.
Stanley's Adjustable.....dis 65&10 %
" Non-Adjustable.....dis 65&10 %

Picks.—New list.....

Pumps.—Bickford.....$5.00, dis 10 %

Rules.—Stanley Boxwood.....dis 65&10 %
Stanley Ivory.....dis 55&10 %

Steelyards.—Hart's Pattern.....dis 35&10 %

₩ doz.	$14.40	17.75	21 00	26.40	31 00	35.50
Lbs.	50	100	150	200	250	300

American Pattern.....dis 35&10 %

₩ doz.	$8.00	10.25	13.75	16.00	18.75	19.50
Lbs.	50	100	150	200	250	300

Squares.
Steel and Iron.....dis 50 %; full case, dis 50&10 %
Try Squares, Stanley.....dis 50&10 %
Disston's Try Squares.....dis 52½ %

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened.....₩ doz $3.00 net
Clipper No. 10, Bronzed Blade, Boxed and Sharpened.....₩ doz $7.50 net
Clipper No. 5, Painted Red, Boxed and Sharpened.....₩ doz $7.25 net

Saws.—Disston's Hand, Panel and Rip.....dis 20 %
Disston's Circular.....dis 35 %
" Cross-Cut No. 2, Plain Tooth.....dis 25%
" " Patent Tooth.....dis 25%
" " Champion Tooth.....dis 25%

Shovels and Spades.
Rowland.....dis 50 %
Oliver Ames & Sons, new list.....dis 20 %

Sad Irons.—4 to 10 lbs.....₩ lb 3&c
Mrs. Potts' Patent.....dis 25 %

Stone.—Arkansas Oil Stone.....₩ lb $2.00 net
Washita Extra.....₩ lb 25c net
" No. 1..... " 18c net
" No. 2..... " 15c net
" Slips..... " 30c net
" Axe..... " 18c net
Turkey Oil Stone No. 1.....₩ lb $1.00 net
Hindostan Oil Stone No. 1.....₩ lb 60 }
" Axe Stone..... " 80 } dis 33⅓&10 %
" Slips..... " 100 }

Screws.
Flat Head Iron.....dis 55 %
" Brass.....dis 40 %
Round Head Brass.....dis 25 %
" Iron.....dis 40 %

Spoons.
Plated.....dis 40, 5&5 %
German Silver.....dis 30, 10&5 %
Britannia, Boardman's.....dis 50&5 %
" Parker's.....dis 50&5 %
Tinned.....dis 15 @ 20 %
" by case.....dis 20 %

Springs.—Torrey.....₩ doz $2.50 net
Philadelphia....5 in., $5.00; 8 in., $7.00 ₩ doz. dis 25 %
Chatfield No. 1, $2.75; 2, $3.25; 3, $4.00 ₩ doz. dis 33⅓ %
Gem Coil No. 1, Large Jap'd.....₩ doz $3.50 } dis
" No. 2, Medium Jap'd..... " 2.50 } 10 %
" No. 3, Small Jap'd..... " 2.00 }

Stocks and Dies......dis 10&5 %

Stove Polish.—Gem.....₩ gross, $4.50, dis 5 %
Dixon..... " 6.00, dis 10 %
Onyx..... " $4.00 @ 4.25 net

Tacks, Brads, &c......dis 40 %
Shoe Nails—4-8 and larger, 60; 3½-5, 70 ₩ lb..... net
Double Pointed Tacks.....dis 40&5 %

Traps.
Genuine Oneida—Newhouse.....dis 30 %
Im. Oneida—Newhouse list, first qual.....dis 50&10 %

Vises.—Solid Box, Trenton new list.....dis 35 %

Wrenches.—Agricultural.....dis 70 %
Coes' Genuine.....dis 60 %
" " Mechanics'.....dis 60&10 %
" " Mail. Bar.....dis 75&10 %
Philada. Tool Co., Duplex.....dis 25 %

Wire.
Bright or Ann'd, No. 0 to 18.....dis 45 @ 47½ %
" " No. 19 to 26.....dis 55 @ 57½ %
" " No. 27 to 36.....dis 60 @ 62½ %
Coppered, 0 to 18.....dis 40 @ 42 %
Tinned Broom Wire.....dis 55 %
Galvanized, No. 7 to 18.....Market List, dis 37½ %

Wringers.—Novelty No. 10.....₩ doz $60.00 net
Novelty No. 2..... " 63.00 net
Universal No. 2½..... " 60.00 net
" No. 2..... " 65.00 net
Peerless, No. 2½..... " 60.00 net
" No. 2..... " 63.00 net

PITTSBURGH.

Merchant Iron.

TERMS.—Note or acceptance at 60 days, with current rate of exchange on New York, or a discount of 2 per cent. for cash, if remitted within 10 days from date of invoice.

Flat Bar.

1¼ to 4 by ⅜ to 1 inch.....3.0c
4¼ to 6 by ⅜ to 1 " 3.1c
1¼ to 6 by 1-16 to 1¼ " 3.4c
1¼ and 1¾ by ⅜ to ¾ " 3.1c
1 and 1¼ by ⅜ to ¾ " 3.2c
⅝, ¾ and ⅞ by ⅜ to ¾ inch.....3.4c

Heavy Bands.

3¼ to 6 by ¼ and 5-16 inch.....3.2c
1½ to 3¼ by ¼ and 5-16 " 3.2c
1 to 1¾ by ¼ and 5-16 " 3.3c
⅝ to ⅞ by ¼ and 5-16 " 3.5c
⅝ and ¼ by ¼ and 5-16 " 4.0c

Light Bands.

3 to 6 by ⅛ to 3-16.....3.3c
3 to 6 by No. 11 and No. 12.....3.5c
1¼ to 2¾ by ⅛ to 3-16.....3.5c
1¼ to 2¾ by No. 11 and No. 12.....3.7c
1 to 1¾ by ⅛ to 3-16.....3.7c
1 to 1¾ by No. 11 and No. 12.....3.9c
⅝ and ⅛ by 1¼ to 3-16.....4.0c
⅝ and ⅛ by No. 11 and No. 12.....4.2c
⅝ and ⅛ by ¼ to 3-16.....4.5c
⅝ and ⅛ by No. 11 and No. 12.....4.7c

Hoop Iron.

⅝ and 9-16, Nos. 13 to 16.....5.7c
⅝ and 11-16, " 13 to 16.....5.2c
⅝ and 13-16, " 13 to 16.....4.7c
1 and 1¼, " 13 to 15.....4.3c
1¼ to 2, " 13 to 15.....3.9c
⅝ and 9-16, " 17 to 20.....6.0c
⅝ and 11-16, " 17 to 20.....5.5c
⅝ and 13-16, " 17 to 20.....5.0c
1 and 1¼, " 18 to 19.....4.6c
1¼ to 2, " 18 to 18.....4.1c
2¼ to 3¼, " 13 to 15.....4.0c
1-10c ₩ lb extra for each gauge lighter than above indicated.

Rounds and Squares.

1 to 1¼.....3.0c
2 to 2¾.....3.2c
2¾ to 3¼.....3.5c
3¾ to 4.....4.0c
4¼ to ⅝.....4.5c
⅝ to ⅞.....5.1c

Oval Iron.

⅝ to 1¼.....3.4c | ⅛.....3.8c
⅝ to ¾.....3.6c | ⅜.....4.2c

Half Oval and Half Round.

⅝ to 1¼ inch.....3.7c | ⅛ inch.....4.4c
⅝ to ¾ " .....4.2c | ⅜ " 6.0c

Horse Shoe.

⅝ to 1¼ by 5-16 to ¾ inch.....4.0c
Wagon Box Iron.....4.5c
Juniata 5c ₩ lb over American.

Sheet Iron.

	Common.	Charcoal.	Juniata.
No. 10 to 14	3.8c	5.3c	6.3c
No. 15 to 17	4.0c	5.5c	6.5c
No. 18 to 21	4.3c	5.8c	6.8c
No. 22 to 24	4.5c	6.0c	7.0c
No. 25 & 26	4.7c	6.2c	7.2c
No. 27	4.9c	6.4c	7.4c
No. 28	5.3c	6.8c	7.8c

All sheets No. 18 and lighter, over 30 inches wide, not less than 2-10c extra.

Tank Iron.

3-16 to ¼ in. thick.....3.8c
Plow Slabs.....4.0c
" Wings.....4.3c

Coal Screen Iron.

1¾ by ⅝ by 5-16.....3.5c | 1 by ⅝ by 5-16.....4.0c

Angle Iron.

2½, 3, 3½ and 4 inch.....3.8c
1½, 1¾, 2 and 2¼ " 3.8c
1¼ inch.....3.9c
1 " 4.1c
1¼ by 1 inch, for Plow Handles.....4.3c
1½ by ¾ " " 4.3c
1¾ by ¾ " " 4.4c

T Rail.

8 lbs. to the yard.....3.4c | 20 lbs. to the yard.....3.3c
12 " " .....3.3c | 28 " " 3.3c
16 " " .....3.3c | 40 " " 3.3c

Cast Chairs and Splice Joints for 12, 16 and 20 lb. Rail, 45c each; 28 and 40 lb. Rail, 55c each.
3¼ by ⅝ and ¼ Spikes for 20 and 28 lb. Rail.....4.2c
3¼ and 3 by ⅝ " " 12 and 16 lb. Rail.....4.5c
2¾ by 5-16 " " 8 lb. Rail.....4.6c

Flat Rails.—Punched and Countersunk.

1¼ to 2 by ¼ to ⅝ inch.....3.5c
1¼ by ¾ and 7-16 inch.....3.7c
1¼ by ⅝, 7-16 and ½ inch.....4.0c

Juniata Nail Rods.....7.0c
Norway " 8.5c
Guard Iron, ¾x⅜, ⅝ and ¾x⅝.....4.5c
" ¾x⅝, 9-16, and ¾x¾.....4.7c
Drag Bars.....7.8c
Dropper Bars.....4.3c
Cylinder and Landside Iron.....3.7c
Plow Beam Iron.....3.5c

Wood's Patent Planished Sheet.

1st quality (A).....10½c | 2d quality (B).....9½c

Galvanized Iron—American.

Nos. 14 to 20	12c	No. 27	15c
Nos. 21 to 24	13c	No. 28	16c
Nos. 25 and 26	14c	No. 29	18c

Common and imperfect Juniata, 40 % off. Discount, 50&10 %.

Roofing Iron, Corrugated or Crimped.

Galvanized Common.	Black.
No. 20.....9½c net cash	No. 20.....5.1c
No. 21 & 22..10½c "	Nos. 21 & 22.....5.3c

Bridge Iron.
Carnegie Bros. & Co.'s list.

Beams and Channels.

Solid Wrought Iron Beams, 3 to 10½ in. x30 ft..₩ lb 4 c
" " " " 12 in. by 25 ft..... " 4 c
" " " " 14 in. by 25 ft..... " 4 c
Deck Beams, 7 to 9 in. by 30 ft..... " 4 c
Channel Bars, 1¼ to 10 in. by 30 ft..... " 4.1c
" " 12 in by 30 ft..... " 4.1c

Tee Iron.

1 in. x1 in. to 5 in. x3 in.....₩ lb 4 c

Angle Iron.

Equal Sided, 1x1 to 1¾x1¾ in.....₩ lb 3.9c
" 2x2 to 4x4..... " 3.8c
Unequal Sided, 2x1¾ to 4x4..... " 3.8c
Square Root Angles, 2x2 to 3½x3½..... " 3.8c
Star Iron, 1¾x1¾ to 4x4..... " 3.9c
Sash Iron, 1¾x¾x3-16..... " 4½c
Miscellaneous Shapes, various shapes...₩ lb, 4.0 to 5.0c
Special prices for large lots.

Nails.

Brads and Fencing.

10d to 60d	$3.65	4d and 5d	$4.40
8d and 9d	3.90	3d	5.15
6d and 7d	4.15	2d	6.40

Barrel.

⅞ in.	7.65	1¼ in.	5.40
⅞ "	6.65	1⅛ "	5.15
1 "	6.15	1⅛ "	4.65

Finishing.

1 in.	8.65	1¼ to 1¾ in.	5.65
1¼ "	7.65	2 in.	5.40
1⅛ "	7.90	2½ "	5.15
		3 "	4.90

Casing and Box.

10d to 30d	4.40	6d	4.90
8d	4.65	4d	4.65
		3d	6.15

Fine Blued.

		3d	6.65
4d	5.40	2d	7.40

Lining.

⅞ in.	8.15	¾ in.	9.65

Clinch—All sizes.....5.40
Cut Spikes—All sizes.....3.90
Boat Spikes—Cut.....4.40

Slating.

5d	4.65	3d	5.40
4d	4.65	2d	6.65

Tobacco.

		8d	4.40
10d	4.15	6d to 7d	4.65

Each half keg 10 cents extra.

TERMS.—Note or acceptance at 60 days; or a discount of 2 per cent. for cash, if remitted within 10 days from date of invoice. An abatement of 10 cents per keg allowed upon orders of 200 kegs or over.

Best Refined Cast Steel.

Square, Flat, Octagon and Round.

⅜ to 2 in.	12c	7-32 and 4½ 5 in.	15c
5-16 and 2¼ to 3 in.	13c	3-16 and 5¼ to 6 in.	17c
¼ and 3¼ to 4 in.	14c	5-32 in.	20c

Shingle and Double Shear Nailers, Knife, Tap, Die, Mill, Pick, Drill—Ordinary sizes.....12c

Machinery Steel.

Ordinary sizes, ¾ to 2 in., Round, Square, Flat and Octagon.....7c

5-16 and 2¼ to 3 in.	8c	3-16 and 5¼ to 6 in.	12c
¼ and 3¼ to 4 in.	9c	5-32 in.	14c

Cast Spring Steel.

1 to 4x¼ to ⅛ in.	6c	1⅛ to 3x5-32 to 1-16 in.	7c
7-32 and 4½ to 5 in.	10c	⅛ to 1⅛x5-32 to 3-16 in.	8c

Bessemer, 1c. per lb. less. Same Classification.
Cut to special lengths, ½c. extra.

Agricultural Steels.

Solid Cast Steel Plow, 4 to 16 by 3-16 to ¾ in.....7½c
"Iron Center Plow," 4 to 16x3-16 to ¾ in.....8½c
Soft Steel Center Plow, 4 to 16x3-16 to ¾ in.....8 c
Landside and Cultivator, C. S., ⅛ in. thick.....8½c
Circular Plow Coulters, 5-32 to ¼ in. thick.....12½c
Scythe Back.....7 c
Fork and Rake.....7 c
Horse Rake Teeth, to length.....7½c
Finger Bar.....7½c
Cornstalk Cutter beveled.....7½c
Planters' Hoe, C. S.....7½c
Hoe, C. S.....6½c

Sheet Cast Steels.

	1st qual.	2d qual.	3d qual.	Bessemer.
10 to 20 gauge...	13c.	11c.	9c.	8c.

21 to 26 gauge, 1c. extra for each additional gauge.

Beveled Hoe and Shovel Steel		9c
" " " "	Bessemer	8c

Rolls and Castings.

Furnace, Floor and Straightening Plates.....3 c
Housings and Castings not otherwise specified.....3½c
Guide Plates.....3½c
Spindles and coupling boxes.....3½c
Sand Rolls and Pinions, large size.....3½c
" " small size.....3½c
Pipe Mill Castings.....4 c
Rolling Mill Castings under 50 lbs.....3 c
Spur and Bevel Wheels, large.....3½c
" " small.....4½c
Pulleys up to 30 inches.....4½c
" over 30 inches.....4½c
Engine Castings, light.....4½c
" " heavy.....4 c

Chilled Rolls.

6 to 7 in. diam.,	7 to 20 in. long		5½c
8 to 15 in. "	8 to 40 in. "		4½c
15 to 24 in. "	15 to 72 in. "		4½c
24 to 32 in. "	72 to 108 in. "		4½c

Horse Shoes, Etc.—In 100 keg lots.

Juniata Horse Shoes.....per keg, $4.00
" Mule " 5.00
" "Roadster" pattern..... " 4.25
Steel Toe Calks.....90 per lb., less dis. on quantities

White and Red Lead.

Strictly Pure White Lead in Oil, in kegs, in lots of 500 lb and over, 8½c; less than 500 lb, 9c; in 25 and 50 lb Tin Pails, ½c. ₩ lb over Keg price; 12½ lb Tin Pails, 1c ₩ lb over keg price; assorted, 1 to 5 lb, 100 lb Cases, 11c.
Dry White Lead..less than 500 lbs., 8¼c; over 500 lbs. 7¾c
Orange Mineral, genuine, in kegs, 10c; in barrels, 9½c
Red Lead, very brilliant, " 7½c; " 7 c
Litharge (Potter's Lead) " 7¼c; " 6¾c
Terms: Note at sixty days, or if paid within 15 days from date of invoice, a discount of 1½ per cent. will be allowed, but not otherwise.

Window Glass.

Per Box of 50 Feet.—Discount to 7.

Single Strength.

Size.	AA.	A.	B.	C.
6 x 8 to 10 x 15	$8.25	$7.50	$7.00	$6.50
11 x 14 to 16 x 24	9.25	8.50	8.00	7.25
18 x 22 to 20 x 30	10.75	9.75	8.75	7.75
15 x 36 to 24 x 30	12.25	10.75	9.00	8.50
26 x 28 to 24 x 36	13.00	11.50	9.75	9.00
26 x 36 to 26 x 44	14.50	13.25	10.75	9.50
26 x 46 to 30 x 50	15.00	14.00	11.25	10.50
30 x 52 to 30 x 54	16.00	14.50	12.00	
30 x 56 to 34 x 50	17.25	15.50	13.50	
34 x 58 to 34 x 60	18.25	17.25	15.00	
36 x 60 to 40 x 60	20.75	18.75	17.25	
Double Strength.				
6 x 8 to 10 x 15	12.75	11.75	10.75	10.00
11 x 14 to 16 x 24	14.50	13.25	12.50	11.25
18 x 22 to 20 x 30	17.25	14.75	14.00	
15 x 36 to 24 x 30	19.75	17.25	14.50	
26 x 28 to 24 x 36	21.00	18.50	15.75	
26 x 36 to 26 x 44	23.25	21.25	17.25	
26 x 46 to 30 x 50	24.00	22.50	18.00	
30 x 52 to 30 x 54	25.75	23.25	19.25	
30 x 56 to 34 x 50	27.75	25.00	21.75	
34 x 58 to 34 x 60	29.25	27.75	24.00	
36 x 60 to 40 x 60	33.25	30.00	27.75	

An additional 10 per cent. will be charged for all glass more than 40 inches wide. All sizes above 52 inches in length and not making more than 81 united inches, will be charged in the 84 united inches bracket.

HYATT'S PATENT SPRING BOLT.



Patented Jan. 29th, 1878.
For Fastening Cabinet Ware, Closet and House Doors, &c.

We call the attention of the trade to these Wrought Brass and Iron Bolts, as being the best and cheapest in the market. Sizes, two inches and upward, both plain and neck bolts. Two screws fasten the bolt and bed-plate to the wood; no others are required; the bed-plates are made of brass, from which the spring is cut and raised, upon which the bolt slides with easy, elastic movement, saving expense of screws and producing a strong, handsome and cheap Bolt. Price list furnished on application.

BRASS GOODS MFG. CO.,
43 Chambers St., New York.

We also manufacture all kinds of Brass and Tin Goods, Drop Bases, Thimbles and Roses for Door Knobs, Plate Escutcheons, Brass Labels, Patent Mirror Business Cards, &c.

THE UNIVERSAL
LIFTING JACK,

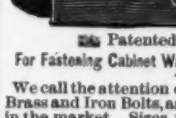
For lifting carriages, wagons, heavy loaded teams, fire engines, railway cars, &c. Four sizes, with patent rubber cushions; will not mar the finest painted carriage.

DINSMORE MFG. CO.,
235 Washington St.,
BOSTON.

Silver medal awarded by Massachusetts Mechanic Charitable Association.

FOR SALE BY
SARGENT & CO., 37 Chambers St., New York.
MACOMBER, BIGELOW & DOUSE, 156 Oliver St., Boston.

ISRAEL H. JOHNSON, JR., & CO.



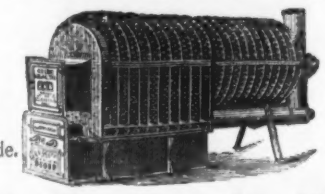
Tool and Machine Works,
Manufacturers of Lathes of all varieties (for foot or steam power), with their supplies, Screw, Lever and Drop Presses, Shears, Jewelers' Tools and Machinery. Also, Mortimers' Patent Rapid Transit Wrench. Designing and Building of Special Machinery Mill Work, &c.
Office: 440 North 12th St., Philadelphia.



John McLean,
Manufacturer of Ayers' Hydrants
Stop Cocks & Galvanized Cemetery Supplies.
298 & 300 Monroe St., N. Y.

GOLD'S PATENT HEATERS

"HEALTH," "TUBULAR,"

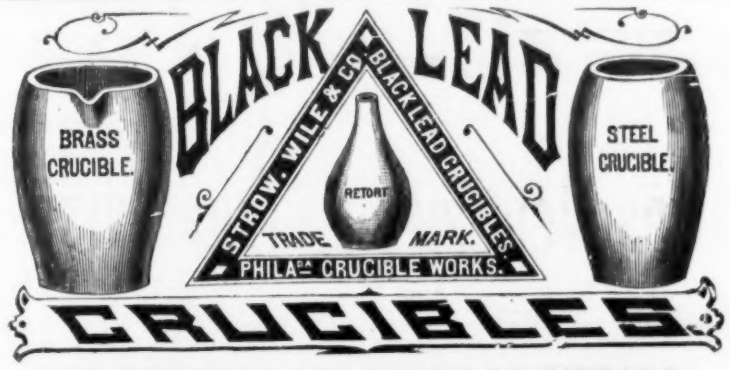


"HYGEIAN," "PERFECT."

Ample Discounts to the Trade. Special Rates to Agents

The Best Heaters in the World.
AND THE
KEYSER "PEACE MAKER" HEATERS.
MANUFACTURED BY
Gold's Heater Manufacturing Co.,
624 to 642 East 14th St., New York.
Send for Catalogue.

AXLES, SPRINGS, TOOLS, MACHINERY, CARRIAGE MAKERS' SUPPLIES.
Manufactured and sold by
Guy C. Hotchkiss, Field & Co.
624 to 642 East 14th St., New York.



FOR MELTING ALL KINDS OF METALS,
And Manufacturers of
Sunny Side Stove Polish.
Lumber Pencils, Foundry Facings and Lubricating Plumbago
WILE, SIEDEL & CO.,
Nos. 1324, 1326, 1328, 1330, 1332 & 1334 Callowhill St., Phila.
GENERAL AGENTS:
Messrs. HALL & CARPENTER, 709 Market St., Phila.



WM. F. FOREPAUGH, JR. & BROS.
Manufacturers of SUPERIOR OAK TANNED
LEATHER BELTING.
N. W. Cor. Randolph and Jefferson Sts., PHILADELPHIA.

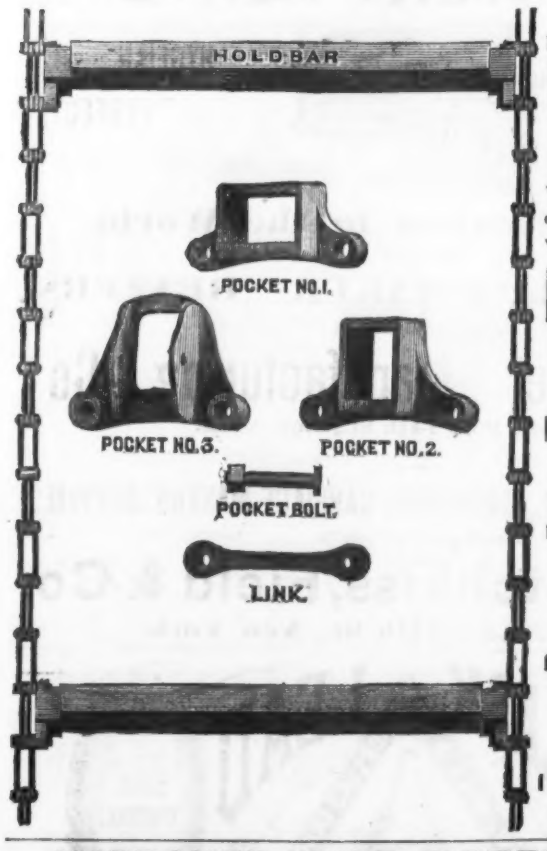
Morse Twist Drill and Machine Co.,
NEW BEDFORD, MASS., Sole Manufacturers of
Morse Patent Straight-Lip Increase Twist Drill,
Beach's Patent Self-Centering Chuck, Solid and Shell Reamers.
BIT STOCK DRILLS,
Drills for Coes, Worcester, Hunter and other Hand Drill Presses. Beach's Patent Self-Centering Chucks, Center and Adjustable Drill Chucks, Solid and Shell Reamers. Drill Grinding Machines. Taper Reamers, Milling Cutters and Special tools to order.
All Tools exact to Whitworth Standard Gauges.
GEO. R. STETSON, Supt. EDWARD S. TABER, Treas.

GEO. M. SCOTT,
Bellows Manufacturer,
Johnson Street,
Cor. 22d St.,
CHICAGO, ILL.



RHODE ISLAND HORSE SHOE CO.,
MANUFACTURERS OF
Horse, Mule & Snow Shoes of the Perkins Pattern.
Works at Valley Falls, R. I., and Buffalo, N. Y. Office, 31 Exchange Place, Providence, R. I.
F. W. CARPENTER, President. C. H. PERKINS, Gen'l Manager. R. W. COMSTOCK, Secretary.

ICE CHAIN.



We are prepared to furnish promptly all kinds of

Flat Link Chains.

We have a book showing 100 different sizes of Links, which will be sent upon application.

Providence Tool Co.,

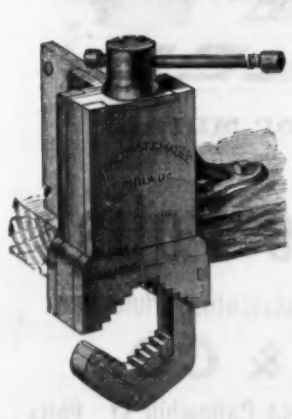
PROVIDENCE, R. I.

Boston Agency,
13 & 15 Pearl St.
J. H. WORK.

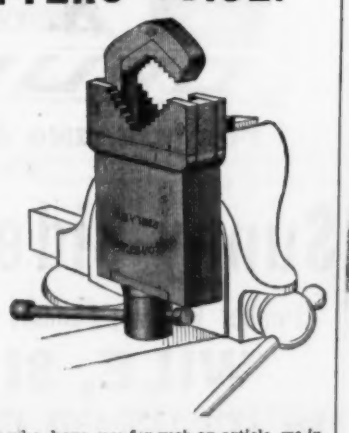
New York Agency,
11 Warren Street,
HENRY B. NEWHALL.

Chicago Agency,
163 & 165 Lake S
S. H. & E. Y. MOORE.

IMPROVED PIPE-FITTERS' VISE.



STRONG,
LIGHT,
EFFICIENT,
CHEAP.



To meet the requirements of the large number of persons who have use for such an article, we invite attention to our Improved Pipe Vise. This Vise can be used either as a permanent fixture to work-bench, attached to angle plate or can (unlike others) be held between the jaws of any Machinist's or Blacksmith's Vise; the movable jaw being OPEN ON SIDE permits work to be gripped at any desired point without slipping it in from end, and allows of FITTINGS BEING HELD securely; the Box is made of Malleable Iron, the Screw of Wrought Iron, and the remainder of Solid Steel throughout. The Steel Gripping Jaws can be duplicated and replaced at any time when worn out. It is a very convenient tool, well adapted to the wants of Plumbers, Pump Fitters, Well-Drivers, and all who have use for a tool that is *strong, light, efficient and cheap* which can be readily carried about with kit of tools.

MANUFACTURED BY

PANCOAST & MAULE,

243 and 245 South Third Street, Philadelphia.

Wheeler, Madden & Clemson

MFG. CO.,

MIDDLETOWN, - - - - NEW YORK.

Manufacturers of

WARRANTED CAST STEEL

SAWS

Of every description, including

Circular, Shingle, Cross-Cut, Mill, Hand,

WOOD SAWS, Etc., Etc.

AMERICAN SAW CO.,

Manufacturers of

Movable Toothed Circular Saws,

PERFORATED CROSS-CUT SAWS

And SOLID SAWS of all kinds. Trenton, N. J.

HUNDLEY & HANKS,

PROPRIETORS OF

NORTH CAROLINA HANDLE CO.

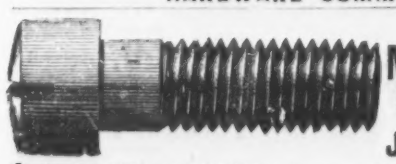


MANUFACTURERS OF

Handles and Spokes,

79 Reade Street and 97 Chambers Street, - - - NEW YORK.

HARDWARE COMMISSION MERCHANTS.



TURNED
MACHINE SCREWS,

One-sixteenth to five-eighths diameter.
Heads and points to sample.
IRON, STEEL and BRASS.

JOHN FELLOWS,

Successor to LYON & FELLOWS.) Factory and Office, *14 Dunham Place, Williamsburgh, N. Y.*

L. M. RUMSEY & CO.

MANUFACTURERS & JOBBERS OF

PUMPS & FIRE ENGINES,

LEAD PIPE & SHEET LEAD, GAS PIPE FITTINGS,



RAILWAY SUPPLIES,

PLUMBERS & STEAM FITTERS BRASS GOODS, BELTING, HOSE, PACKING &C.

NO. 810. N. SECOND STREET, ST. LOUIS, MO.

Manufacturers of GALVANIZED PUMP CHAIN FOR CHAIN PUMPS.



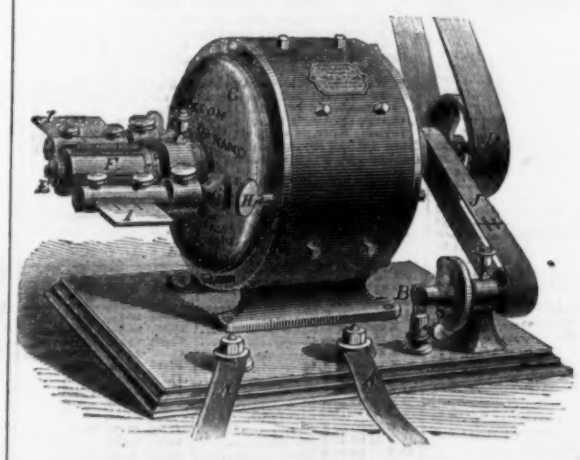
PATENT
Expanding, Self-Draining
RUBBER BUCKET.
Manufactured only by
L. M. RUMSEY & CO.

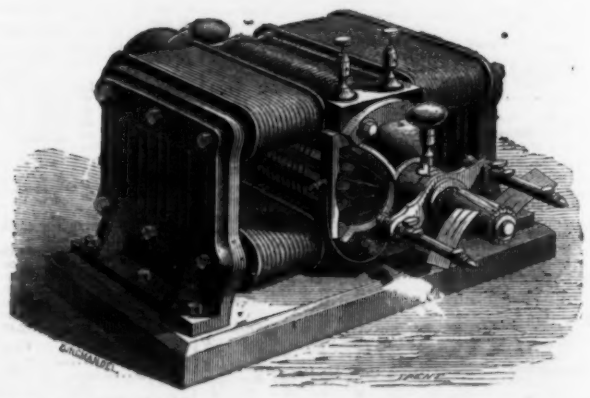
WESTON DYNAMO-ELECTRIC MACHINE CO.

286 Washington Street, Newark, N. J., U. S. A.,

MANUFACTURERS OF

Machines for Electric Light, Electrotyping and Electro-Plating.





ARE MAKING

THE MOST POWERFUL, SIMPLE AND COMPACT ELECTRIC LIGHT MACHINE IN THE WORLD.

By actual tests this machine has been found to yield more than double the amount of light per horse-power obtained from the best machines built in this country.

Please send full particulars regarding buildings or localities to be lighted, available power, &c.

Centennial Gold Medal American Institute, 1876. Medal of Superiority, American Institute, 1877.
Centennial Medal, Philadelphia, 1876. Paris Medal, 1878.

TO THE HARDWARE TRADE.

PATENT EXTENSION,
Patented Jan. 29, 1878.



Patented in Great Britain
March 18, 1878.

We desire to call your attention to our NEW

PATENT EXTENSION DOOR KNOBS.

These we manufacture in every variety of style.

Your especial attention is called to our **"SILVER GLASS,"** and **"ENAMELED" KNOBS,** the latter being an entirely new article.

These we offer to the Trade, feeling confident of their superiority to any other door knobs in the market. Our new method of extension is simple, durable and perfect.

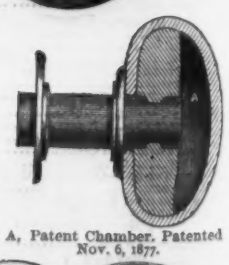
Our Knobs can be adjusted to doors of any thickness without the annoyance of the old-fashioned washers and pins.

We feel confident that a trial will make plain their merits.

Very truly yours,

THE STAR SALT CASTER CO.,

BOSTON.



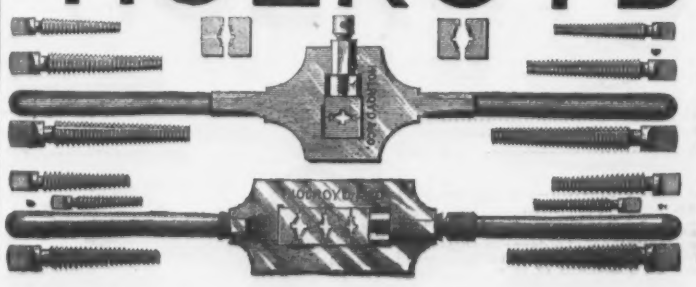
A, Patent Chamber. Patented Nov. 6, 1877.

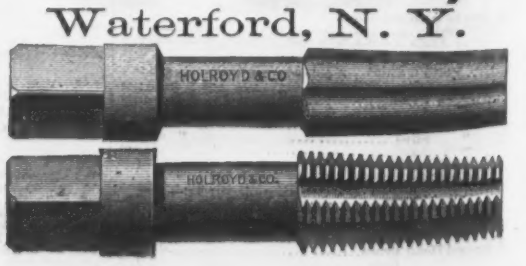




HOLROYD & CO.,

Waterford, N. Y.

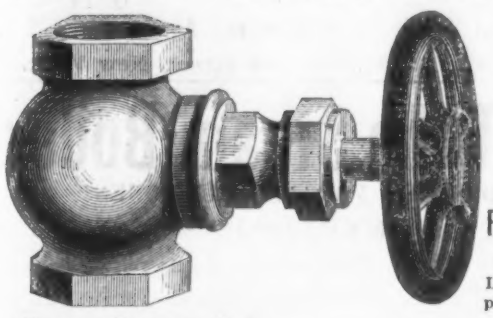




McNab & Harlin Mfg. Co.,

MANUFACTURERS OF

BRASS COCKS AND VALVES,



For STEAM, WATER and GAS.

Iron Pipe and Fittings.

PLUMBERS' MATERIALS

New Illustrated Catalogue and Price List sent by express to the Trade on application.

Factory, Paterson, N. J. 56 John Street, N. Y.

COULTER, FLAGLER & CO.,

87 Chambers and 69 Reade Sts., New York,

Hardware Manufacturers' Warehouse.



Gay & Parsons' Double Action Ratchet Screw Driver.

Office and Warehouse of Union Hardware Co.; Rugg Mfg. Co., Draw Knives, Chisels, &c.; Deuse Bros., Bits, Corkscrews, &c.; Richardson Bros., Saws of all kinds; Brooks Edge Tool Co.'s Axes, Hatchets, &c.; M. Price, Hatchets, &c.; J. & W. Rothery, Extra Hand Cut Files; L. D. Frost, Carriage Bolts, Refined and Norway Iron; Cowles Hardware Co., Screwdrivers, Mincing Knives, &c.; Rider, Wooster & Co., Anti-Friction Barn Door Hangers, &c.; H. B. Hawley, Shears of all kinds; Walden Knife Co., Pocket Cutlery; American Screws; N. Y. Anti-Friction Metal Co.'s Babbitt Metals; Howard, Razor Strops; C. Forschner, Spring Balances; P. Lowentraut & Co., Dividers, Calipers, &c.; Shepard Hardware Co., Fluters, Blind Hinges, &c.; Saxton & Amedon, Braces, all kinds; Bevin Bros. Mfg. Co., Bells, all kinds; B. H. Parsons & Bro., Pliers, Nippers, &c.; C. L. Griswold, Cast Steel Bits; Lancaster Lock Works, Jail Locks.

STANDARD NUT CO.,

Pittsburgh, Pa.,

MANUFACTURERS OF



HOT PRESSED

Square & Hexagon Nuts,



R. R. FISH BARS,

BOLTS,

SPIKES,

RIVETS, &c.

HENRY B. NEWHALL 11 WARREN ST. N NEW YORK AGENT

SANDS' TRIPLE MOTION WHITE MOUNTAIN ICE CREAM FREEZERS.

THE WHITE MOUNTAIN FREEZER COMPANY are headquarters for Ice Cream Freezers and Ice Crushers, being the only firm in the United States who manufacture all parts of the raw material. The Examining Committee, consisting of 50,000 citizens of the United States have recommended the *Sands' Triple Motion White Mountain Freezer* to all persons in the world for the following reasons: We have used them; they freeze quicker than any other; they save time, salt and ice; the triple motion makes smooth cream without bunches; makes more of it; galvanized iron outside; tin inside; no zinc in contact with the cream; easily adjusted; substantially made; simple in construction; perfect in results. Send for descriptive circular and discount of this celebrated Freezer. Address,



HAND FREEZER. 2 to 25 qts. $3.50 to $25.00

HAND OR POWER. 25 and 60 qts. $75.00 and $175.00

HAND OR POWER ICE CRUSHER. $75.00

White Mountain Freezer Co., Laconia, N. H., U. S. A.

SPECIAL ATTENTION GIVEN TO EXPORT ORDERS.

THE J. MORTON POOLE COMPANY,

Wilmington, Delaware,

Beg to call the attention of manufacturers of Sheet, Hoop and Band Iron to their

Patent Roll Grinding Machines

for grinding the rolls used in said manufacture By grinding such rolls, instead of turning, a much greater degree of accuracy is obtained, and as very much less metal is removed from the roll by the grinding operation, the rolls will last much longer. Our Grinding Machines produce perfectly accurate work, and will grind either straight or hollow.

No. 1. No. 2.

NEW sizes Patent Malleable Iron Oilers, Nos. 2 and 3.

NEW pattern Heavy Screw Clamps; strongest in the market.

Send for Price List.

Malleable Iron Castings

Of superior quality, and Hardware Specialties in Malleable Iron made to order.

HAMMER & CO., Branford, Conn.





"THE BOSS" JACK-SCREW.

R. D. WYNN,

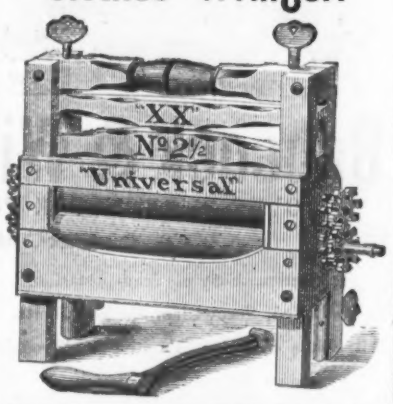
Windsor, Vt., U. S. A.,

Sole manufacturer of the above Screw. Indorsed by builders, railroad and mining men as the best screw jack in the market. Also manufactures Press Screws, Lard and Wine Presses, Tackle Blocks, &c. Circulars and prices, address as above. (Please say *The Iron Age.*)

Agents. { Pugsley & Chapman, 8 Liberty St., New York. Sam'l May & Co., 16, 18 & 20 Oliver St., Boston.

THE "OLD RELIABLE"

UNIVERSAL Clothes Wringer.



Improved with Rowell's Double Cog-Wheels on both ends of each roll.

Over 500,000 sold!

And now in use, giving "Universal" satisfaction

EVERY WRINGER WARRANTED.

Be sure and inquire for the "Universal."

Sold by the **Principal Jobbers in Hardware and House-Furnishing Goods** everywhere.

☞ Special rates given for export.

Metropolitan Washing Machine Co.

32 Cortlandt St., New York.

WM. S. CARR & CO.



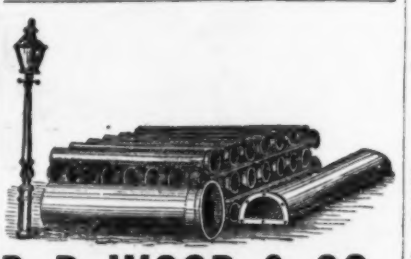
Sole Manufacturers of

CARR'S PATENT Water Closets,

PUMPS, CABINET WOOD WORK, &c.

106, 108 & 110 Centre Street,

Factory, Mott Haven. - - - NEW YORK.



R. D. WOOD & CO.

Philadelphia,

Manufacturers of

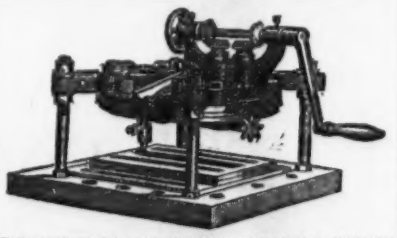
Cast Iron Pipe

FOR WATER AND GAS.

Lamp Posts, Valves, &c.,

Mathew's Pat. Anti-Freezing Hydrants.

400 CHESTNUT STREET.



PATENT PORTABLE VALVE SEAT ROTARY PLANING MACHINE.

Manufactured by the

L. B. Flanders Machine Works,

1025 Hamilton St., Philadelphia.

Descriptive Circular on application.

RIEHLE BROS.

STANDARD

SCALES AND TESTING MACHINES

Patent "Self-Adjusting" Railroad Track Scales, pronounced "the most accurate and durable" over all competitors at World's Fair, 1876. In use by Pennsylvania, Lehigh Valley, Baltimore and Ohio, and other Railroads. Patent Coal and Hay Scales. Warehouse and Platform Scales and Scales for all purposes. Machines for testing materials, all sizes. Works, 9th st., at Master; Store, 52 S. 4th st., Phila. New York Office, 51 Liberty Street.

JUST PUBLISHED—SENT FREE.

Complete History of Wall Street Finance, containing valuable information for investors. Address BAXTER & Co., Publishers, 17 Wall street, New York.

SPECIAL NOTICE.

The undersigned, in view of the International Exhibitions to take place in Australia, begs to inform his friends that he continues to make translations of Catalogues, Prices-current, Circulars, Correspondence, &c., from and into the

ENGLISH,
FRENCH,
GERMAN,
PORTUGUESE
and **SPANISH,**

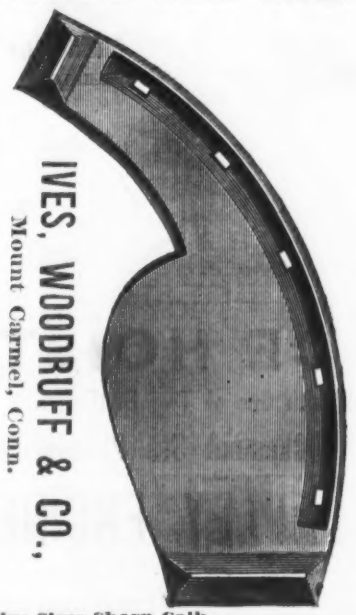
and that he bestows special attention upon a strictly correct rendering of **Technical Expressions** in matters relating to **Machinery, Metallurgy, Hydraulics,** &c The very best reference will be furnished from leading manufacturers in this city, Philadelphia and elsewhere, for whom he has translated. If desired, estimates will be procured for the setting up, electrotyping and printing of catalogues, &c., in the above languages.

C. KIRCHHOFF,

Metal Reporter of The Iron Age,

83 Reade St., New York.

STEEL TOE CALK.



IVES, WOODRUFF & CO.,

Mount Carmel, Conn.

Five Sizes Sharp Calk. Five Sizes Stub Calk.

Send for Circular.



George N. Pierce,

BUFFALO, N. Y.,

Manufacturer of

Bird Cages, Refrigerators

AND

HOUSE FURNISHING GOODS.

Send for Illustrated Catalogue.

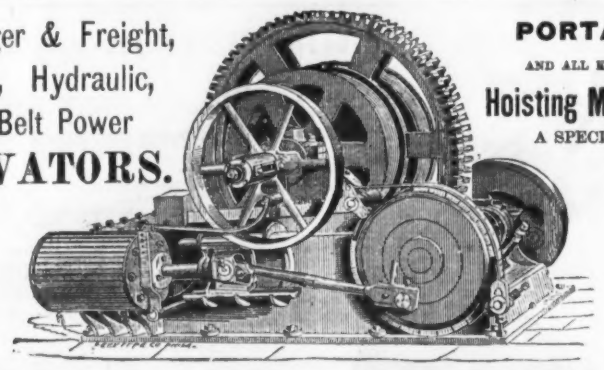
KENNEDY, SPAULDING & CO., Syracuse, N. Y.
HILDEBRANDT & FUGATE, Indianapolis, Ind.
PHILLIPS, BUTTORFF & Co., Agents at Nashville, Tenn.

BOSTON.

Reported by Macomber, Bigelow & Dowse, 156 to 164 Oliver St.

Anvils.—"Eagle American" ₩ ℔ 9c. dis 20 %
Apple Parers.—Reading Turn Table ₩ doz $4.00
Goodell Turn Table " 5.50
" Improved Turn Table & Push-off " 7.50
" Lightning " 6.50
Hudson's Turn Table and Push-off " 6.50
Aiken's Tools. dis 40&10 %
Anvil & Vise.—
No. 1, $4.50; 2, 3.75; 3, 3.00 each dis 25 %
Augurs & Bitts.—Snell's Auger dis 40 %
L'Hommedieu's Ship Augers dis 15 %
Jenning's Bitts dis 10&10&10 %
Cook's Bitts dis 10 %
Stearns Hollow Augers dis 40 %
Sheparson's Double-Cut Bitts dis 40 %
" " Gimlets dis 45 %
Stearn's Extension Hollow Augers per doz $30.00
Bonney's " " " per doz 33.00
Pierce's Bitts dis 40 %
Griswold " dis 40 & 10 %
Axes.—Blue Jackets per doz 8.00
Red Cross per doz 7.40
Handled per doz 10.00
Dowse " Boys' dis 10 %
Ax Handles.—
Oak Extra, 31 in., No. A ₩ doz $2.25
" 34 in., No. A ₩ doz 2.50
" 31 in., No. B ₩ doz 1.75
" 34 in., No. B ₩ doz 2.00
" 31 or 34 in., No. C ₩ doz 1.25
Axle Clips ₩ ℔ dis 55 %
Balances.—Chatillon's dis 20&10 %
Barn Door Rail.—
Cast Angle (for Anti-Friction Hangers) per ft. 3c
" Half-Round per ft, ⅝, 3½c; ¾, 5½c
Wrought " per ft, ⅝, 4c; ¾, 5c; ⅞, 6c
Bells.—Connel's Crank Gong dis 40&10 %
Bird Cages.
Japanned M. B. & D., reduced list, 1879 dis 33⅓ %
Brass " " 1879 dis 25 %
Blind Fasts.—Lock Fasts ₩ C sets $5.00
No. 6 Fasts ₩ C sets 5.50
Veazie Fasts ₩ C sets 6.50
Shedd's ₩ C sets 7.00
Blind Hinges.—Mail Hook, 3 holes ₩ C sets 6.50
Brad Awl Handles.—
Phœnix Adjustable ₩ doz $2.00
Bolts.—Norway Iron Carriage dis 60 & 10 %
Common " dis 70&5 %
Borax.—Refined ₩ ℔ 10c
Boring Machines.—Eagle Upright each, $2.75
Eagle Angle each, 2.50
Snell Augers ₩ set 1.60
Braces.—Barber's dis 40& 5 %
Spofford's dis 50&5 %
Backus' dis 50 & 10 %
Bracket Saws.—Holly Scroll Saw each $2.2
Demas Lathe and Scroll Saw " 6.00
Bracket Saws, extra quality, to No. 4 ₩ gro $0.75
Steel Frame, with patterns ₩ doz 6.50
Lester dis 25 %
New Rogers, all iron each, $2.25
Bracket Saw Blades.
Griffith's patent ₩ gross 75c
Brackets.—M. H. & B. Flower Pot dis 40&10 %
Bronzed Sheet, M. B. & D. list dis 10 %
Bronze Hardware.—Norwalk Lock Co. New list, dis 45&10 %
Butts.—Union Fast Joint dis 40&10 %
" Loose " dis 50&10 %
" Japanned Acorn dis 55&10 %
" Silvered " dis 55&10 %
" Boston Finish dis 75&10 %
Union Spiral Spring dis 25 %
Wrought Brass dis 45 %
Carriage Jacks.
"Climax," No. 1 ₩ doz $18.00
" No. 1½ " 13.00
" No. 2 " 12.00
"Universal" dis 25 %
" No. 1 each, $2.00
" No. 2 " 3.00
" No. 3 " 6.00
" No. 4 " 6.00
" No. 5 " 6.50
Cartridges.—U. S. Cartridge Co. dis 50&10 %
Cards.—Watson's makeHorse and Curry dis 25 & 10 %
" Cotton dis 20&10 %
" Wool dis 20&10 %
Casters.—Bed and Table dis 35&10 %
Chain.—Traces 6/9, 10, 4, straight ₩ pair 58c
" 6/9, 10, 4, twisted ₩ pair 60c
" 7, 12, 2, " ₩ pair 84c
Coil 3-16 ₩ ℔ 11½c
" ¼ ₩ ℔ 9 c
" 5-16 ₩ ℔ 8½c
" ⅜ ₩ ℔ 7½c
" 7-16 ₩ ℔ 6½c
" ½ ₩ ℔ 6½c
Chalk.—White, Carpenter's ₩ gross 45c
Red, Carpenter's ₩ gross 75c
Blue ₩ gross 90c
Chisels.—Hart, Bliven & Mead, Framing dis 65 %
Underhill, Framing dis 20 %
Buck's Shank, Framing dis 30 %
Clothes Line.—
Galvanized Wire, 100 feet each ₩ doz $4.00
Coal Hods.—"Dover."—Galvanized list net
Japanned dis 10 %
Copper Rivets dis 30 %
Cocks.—Brass, L. F. & C. dis 35 %
Cordage.—Manila, usual trade dis 10 ₩ ℔ 14 c
Jute ₩ ℔ 9c
Cow Ties. dis 25 %
No. 30, 3 ft. No. 6 Wire, with toggle ₩ doz $3.60
No. 38, 3 ft. " " with snap ₩ doz 3.80
No. 40, 3½ ft. " " with toggle ₩ doz 3.90
No. 45, 3½ ft. " " with snap ₩ doz 4.10
No. 50, 4 ft. No. 4 " with toggle ₩ doz 4.40
No. 55, 4 ft. " " with snap ₩ doz 4.75
No. 60, 4½ ft. " 3 " with toggle ₩ doz 5.38
No. 65, 4½ ft. " " with snap ₩ doz 5.62
Crow-Bars.—Cast Steel ₩ ℔ 8c
Iron, Steel Pointed ₩ ℔ 6 c
Cutlery.—Pocket, American Shear Co.'s dis 40 %
Butcher Knives, "Woods," Lap Bolster, Square Handle dis 33⅓ %
Steak Knives dis 20 %
Lap Bolster, Oval Handle dis 25 %
Sticking dis 33⅓ %
Skinning dis 33⅓ %
Butcher, Common Round Handle, "Woods" dis 25 %
Shoe Knives, "Woods" dis 10 %
Dividers.—Cook's dis 25 %
Dog Collars dis 20 %
Dog Muzzles.—Automatic dis 15 %
Door Springs.—Torrey's Rod ₩ doz $1.75
Gem Coil dis 10 %
Crown ₩ doz $1.25
Warners ₩ doz $2.25
Door Stops.—"Thurston's" dis 50 %
Drawer Knobs.—"Thurston's" dis 50 %
Drills.—Morse Bitt Stock dis 25 %
Morse Straight Shank dis 20 %
Emery.—Wellington Mills ₩ ℔ 10c
Alden's ₩ ℔ 6c
Enamelled Ware.
Standard Mfg. Co. Kettles dis 40&10 %
" Sauce Pans dis 20 %
Felloe Plates.—Wrought ₩ ℔ 9c
Files.—Madden & Cockayne dis 25 %
American File Co. dis 30 %
Nicholson " dis 25 %
Fluting Machines.
Knox, with 6 inch rolls ₩ doz $48.00
Geneva ₩ doz 13.50
Rochester ₩ doz 12.00
Forks. W. C. & Co., Manure dis 40 %
Gimlet Bitts.
Genuine German, No. 125, 1-32 to 8-32, per doz $1.00
Pierce's per doz 75c
Glass Cutters.
Combination Glass Cutter and Knife Sharpener ₩ doz $1.00
Grub Hoes.—K. P. & Co.'s No. 2 ₩ doz 3.00
Hammers.—Maydole's dis 15 %
Hammond's dis 20 %
Hangers & Rollers.—Anti-Friction dis 50&10 %
Acme Rollers dis 45 %
Climax dis 45 %
Novelty dis 40 %
Common dis 40&10 %
Hand Screws dis 20 %
Hatchets.—C. F. Dowse dis. 10 %
Underhill dis 25 %
Hay Knives.—Lightning ₩ doz $18.00 net
Hinges.—Strap and T (new list) dis 45&10 %
Providence Plate ₩ ℔ 5c
Wrought Screw Hook ₩ ℔ 5c
Hoes.—W. C. & Co.'s dis 40 %
Hooks and Staples.—Brewers' dis 40 %
Horse Nails. No. 6 7 8 9 10
National Finished .23 .21 .20 .19 dis 25 %
Putnam Pointed .25 .23 .22 .21 10 %
Horse Nails.—Bridgewater dis 25 %
No. 6, 23; No. 7, 21; No. 8, 20; No. 9, 19.
Knobs.—"Norwalk." New list dis 55&10 %
Silver Glass ₩ doz $10.50
" Bell Pulls ₩ doz 6.50
Lanterns.—Tubulars, No. 0 ₩ doz 3.64
Beacon Light ₩ doz 8.00
Railroad, Oil, No. 43 ₩ doz 8.00
Guarded, Oil and Candle, No. 26 ₩ doz 3.50
Trianguiar ₩ doz 4.00
Hurricane dis 20 %
Lead.—Sheet ₩ ℔ 8 0
Pipe ₩ ℔ 7½c
Locks.—Norwalk Genuine Bronze Goods dis 40 %
Eagle Cabinet dis 25 %
" Trunk dis 25 %
W. Wilcox & Co., Padlocks dis 10&5 %
American Lock Co.'s Steel Key dis 33⅓ %
Metallic Sieves.—Mann's Patent dis 25 %
Manure Forks.—W. C. & Co. dis 40 %
Mattocks.—K. P. & Co., Long Cutter ₩ doz $11.20
K. P. & Co., Short Cutter ₩ doz 10.85
" " Pick " ₩ doz 12.20
Measuring Tapes.—Eddy's dis 20 %
Meat Cutters.—Miles' Challenge dis 30 %
Hale's, (New list) dis 40 %
American dis 25 %
Money Drawers.—Tucker's Alarm ₩ doz $22.50
Mouse Traps.—Delusion ₩ doz 2.00
Novelty ₩ doz 1.75
Nails ₩ keg, rates 3.60
Oilers.—Zinc and Tin dis 45 %
Brass and Copper dis 33⅓ %
Ox Bows.—Extra finished and varnished dis 20 %
1¼ in., ₩ doz. pair $5.75 | 2 in., ₩ doz. pair $9.00
1¾ in., " " 8.00 | 2½ " " 11.00
Padlocks.—W. Wilcox & Co.'s dis 10&5 %
Miller's Brass ₩ doz $7.50
Picks.—K. P. & Co., Adze Eye, 5 to 6 ℔ ₩ doz 8.40
" " 6 to 7 ℔ ₩ doz 9.10
Planes.—Greenfield Tool Co. dis 30 %
N. Y. Tool Co. dis 40 %
English Iron dis 20 %
Bailey's dis 25&10 %
Plated Ware.—Rogers & Bro. dis 40&5 %
Pliers.—Vom Cleff & Co.'s Gold list 5 %
Button's Wire Pliers dis 33⅓ %
Plumb & Levels.—Stanley, R. & L. Co. dis 50&10 %
Pocket Knives.
American Shear Co.'s dis 33⅓&10 %
Potato Diggers.—W. C. & Co. reduced list dis 40 %
Pulleys.
Acme or Excelsior, 1¾ in. per doz 25c
" 2 in. " 28c
Pulley Blocks dis 40 %
Pumps.—Union Manufacturing Co.
Iron Cistern dis 40 %
" Pitcher Spout dis 40 %
Copper dis 30 %
Rivets.—Black dis 45 %
Carriage in 10 ℔ papers dis 30 %
Copper dis 30 %
Razor Strops.—Torrey's Full list
Rules.—Stanley Boxwood, dis 60&10 %
" Ivory, dis 55&10 %
Sadirons.—Common ₩ ℔ 3½c
Laundry ₩ ℔ 5c
Tailor's Geese ₩ ℔ 6c
Enterprise, "Potts" dis 25&10 %
Sash Locks.—King & Hutchinson's, new list dis 40 %
Hopkins & Dickinson's dis 40 %
Sandpaper.—Baeder & Adamson dis 25 %
M. B. & D. dis 25&5 %
Sash Weights.—Patent Eye ₩ ℔ 2 c
Saws.—Hand Saws, Disston's dis 20 %
Wheeler & Clemson dis 30 %
Cross-Cut Saws.
W. M. & C., Common Tooth, No. ₩ foot 35c
" " Champion " ₩ foot 35c
Disston's, Common " ₩ foot 44c
" " Gt. American " ₩ foot 44c
Boynton's Lightning " ₩ foot 45c
M. B. & D., Hand Saws dis 40 %
W. M. & Co.'s, Circular Saws dis 40 %
Saw Setts.—Spring Lever ₩ doz $10.00
Saw Blades.—Disston dis 20 %
W. M. & C. dis 10 %
Welch & Grimth, Extra ₩ doz $8.40
" " No. 2 ₩ doz 7.00
Scales.—Fairbanks dis 20 %
Howe dis 20 %
Screws.—Aiken's Flat-Head Iron dis 55 %
American Flat-Head Iron dis 55 %
" " Brass dis 40 %
" Round-Head " dis 25 %
" " Iron dis 40 %
Grilley " Nickel-plated Piano dis 55&5 %
" " " Common dis 40 %
Shaves.—Kimball's ₩ inch 75c
Watrous dis 15 %
Shears.—American Shear Co., new list dis 75 %
Shot.—Tatham's ₩ ℔ 7½c
Shovels.—O. Ames, new list dis 20 %
O. Ames, other brands, new list dis 20 %
M. B. & D. dis 20 %
Oxford, Birmingham Pattern dis 45 %
Snow Shovels.—Malleable tips ₩ doz $4.00
Skates.—Union dis 25 %
Acme dis 20 %
Stock and Dies.—King's dis 10&5 %
Tacks.—A. Field & Son's dis 40 %
Pittsfield dis 40 %
Swedes Tinned 40 %
Swedes Iron 45 %
Gimp and Lace 45 %
Copper Tacks 40 %
All balances on list 40 %
Traps.—Oneida, Genuine dis 33⅓ %
Oneida, Imitation, H. & N. dis 50 %
Blake's dis 40 & 5 %
Tree Scrapers.—No. 1 ₩ doz. $2.00
No. 2 ₩ doz 3.00
No. 3 ₩ doz 4.00
Vises.—Simpson's Adjustable dis 20&10 %
Howard Vise Co. dis 33⅓ %
P. L. & Co., Solid Blacksmiths' new list dis 10 %
Weather Strips.—Packer's ₩ doz $4.40
Browne's Flexible Rubber dis 30 %
In 20 feet boxes; No. 1, ½ in. wide, ₩ yard, 10c.; No. 2, ⅝ in., 12c. No. 3, ¾ in., 20c.; No. 4, 1 in., 25c.
Valentine's Felt Moulding dis 30 %
Black Walnut Spring Weather Strips ₩ doz. $3.00
Window Springs. dis 20 %
Babcock's No. 3 ₩ gross $6.25
" 4 ₩ gross 4.15
Wire Goods.—Gate Hooks and Eyes, &c., new list dis 30&10 %
Wrenches.—A. G. Coe's dis 60 %
Girard Mfg. Co. dis 60 %
Girard Agt. dis 60 %
Wringers.—Universal, No. 2 ₩ doz $60.00
Universal, No. 2½ ₩ doz 60.00
Novelty, No. 10 ₩ doz 60.00
" No. 2 ₩ doz 63.00
" No. 22 ₩ doz 67.00
Excelsior, No. A ₩ doz 78.00
" No. B ₩ doz 86.00
" No. CC ₩ doz 108.00
Novelty Set Tub, E ₩ doz 66.00
Eureka ₩ doz 54.00
Keystone, Wood Frame No. 1½ ₩ doz 51.00
" Iron Frame No. 2½ ₩ doz 41.00
Peerless ₩ doz. No. 2½, 60.00; No. 2, 65.00; No. 3, 71.00
Unique, No. 1 ₩ doz 54.00
Zinc ₩ ℔ 9 c
Withington, Cooley & Co.—Hoes, Rakes, Forks, &c. dis 40 %. Special rate for Export.

Passenger & Freight,
Steam, Hydraulic,
and Belt Power
ELEVATORS.

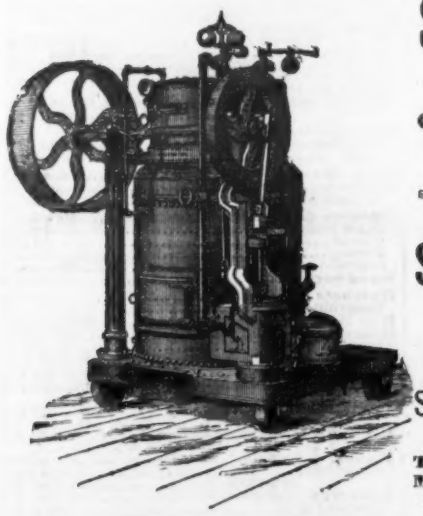


PORTABLE
AND ALL KINDS OF
Hoisting Machinery
A SPECIALTY.

IRON FURNACE HOIST,

For Handling Stock to Top of Stack with One or Two Platforms.

STOKES & PARRISH, 3001 Chestnut St., Philadelphia.



SHAPLEY ENGINE.

Patented - - - Feb. 10, 1874.
Reissued June 22, 1875.

Compact, Practical, Durable and Economical.

Acknowledged to be the best in use. This boiler stands unrivaled.

MANUFACTURED BY

SHAPLEY & WELLS,

Binghamton Iron Works,
Binghamton, N. Y.
MANUFACTURERS OF

Stationary Engines and Boilers.

Also **Machinery for Mills** of all kinds and **Tanneries.** Also their celebrated **Bark Mills,** acknowledged to be the best.
Send for reduced price list circular.

JOHN ADT,

BUILDER OF MANUFACTURERS' TOOLS, New Haven, Conn., U. S. A.

Automatic machines to straighten and cut wire of all sizes to any length; to cut and mill wire for butt pins, bolt shanks and similar articles; to make all kinds of ordinary staples, with either square, fleam, chisel or shear points; to make all kinds of barbed staples, including those used for blinds; to roll points on picture nails and similar articles without the use of heat; to cut and form wire into various shapes and sizes, such as rings, buckles, fence barbs and the like; combined hand and power machines for straightening and cutting wire, and machines to straighten and cut wire by hand; a variety of roll and rotary wire straighteners; machines for riveting together articles of hardware; to drill butts and other hardware; to mill butts; to drill or countersink several holes at one time, close together or at some distance apart, on a regular or irregular line; for grinding, buffing and polishing; foot, hand and power presses, and dies and tools for the same, to order; also modifications of any of the above, for special purposes.

Send for circulars.

Great Reduction in Price of

CHUCKS

both to the trade and consumers. Address,

A. F. CUSHMAN, Hartford, Conn.



Ludlow Valve Mfg. Co.,

OFFICE AND WORKS:

938 to 954 River St. & 67 to 83 Vail Ave., Troy, N. Y.,

VALVES.

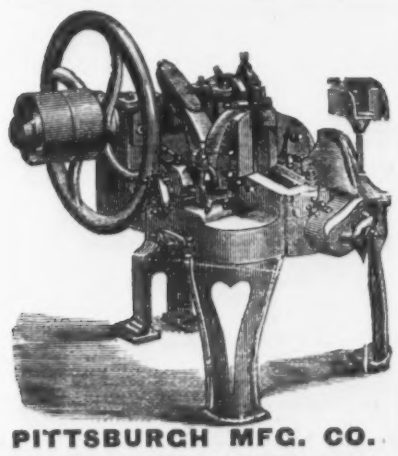
Double and Single Gate, ¼ in. to 48 in.—outside and inside Screws, Indicator, &c. for Gas, Water and Steam. Send for Circular.

Also FIRE HYDRANTS.

THORNE, DeHAVEN & CO., Drilling Machines,

21st Street, above Market, Philadelphia.

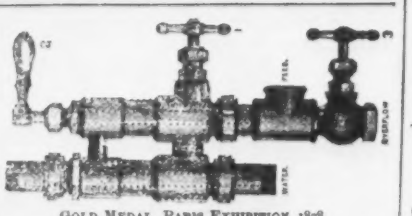
PORTABLE DRILLS. Driven by power in any direction.
RADIAL DRILLS. Self-feed—Large Adjustable Box Table.
VERTICAL DRILLS. Self-feeding.
MULTIPLE DRILLS. 2 to 20 Spindles.
HORIZONTAL BORING AND DRILLING MACHINES.
HAND DRILLS. CAR BOX DRILLS.
SPECIAL DRILLS For Special Work.



PITTSBURGH MFG. CO.

Manufacturers of Nail and Spike Machines, Bolts, Nuts, Washers, Rivets, &c. Castings, Forgings and Blacksmith Work promptly attended to.

OFFICE & WORKS, Railroad St., near 28th, Pittsburgh, Pa.



GOLD MEDAL, PARIS EXHIBITION, 1878.

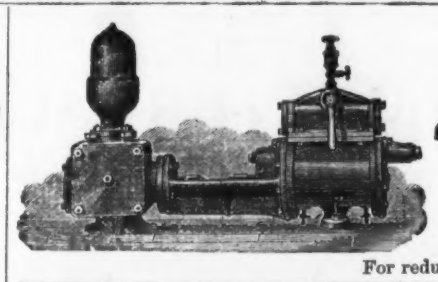
THE HANCOCK INSPIRATOR,

New Combined Pump and Injector.

Eclipses all other appliances hitherto introduced for feeding Steam Boilers. A Portable Boiler is not perfect without one. It lifts its water 25 feet with a low steam pressure, and puts it directly into the Boiler. No adjustment necessary for varying steam pressures.
G. W. STORER, General Agent, 140 N. 3d st., Phila.

STEAM PUMPS

Manufactured by
Crane Bros. Mfg. Co.,
CHICAGO.



A. S. CAMERON'S
PATENT
"SPECIAL" STEAM PUMP

Is the Standard of Excellence at Home and Abroad.

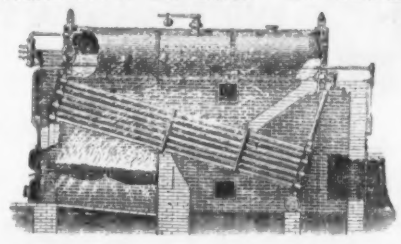
For reduced price lists address **A. S. CAMERON, East 23d Street, New York.**

Babcock & Wilcox Water-Tube Steam-Boiler

OVER 35,000 HORSE-POWER NOW IN USE. ADAPTED FOR ALL PURPOSES.

SAFETY FROM EXPLOSIONS.

In Sections Easy of Transportation.
No Bolted, Screwed or Packed Joints.
All Joints Made by Expanding Wrought Iron Tubes into Bored Holes.
Can be Erected or Repaired by Ordinary Mechanic.



Easily Cleaned from Soot or Sediment.
Adapted to all kinds of Fuel.
Steady Water Line and Dry Steam.
No Leaks from Unequal Expansion.
Rapid Steaming.
Highest Attainable Economy.

CENTENNIAL EXPOSITION MEDAL AWARDED THIS BOILER FOR HIGHEST ECONOMY AND EFFICIENCY ON TEST.

Illustrated Circulars and other desired information promptly furnished. **BABCOCK & WILCOX, Engineers, 30 Cortlandt St., N. Y.**

Bliss & Williams,

MANUFACTURERS OF ALL KINDS OF

PRESSES and DIES.



Also Manufacturers of
SPECIAL MACHINERY
FOR
WORKING SHEET METALS, &c.
FRUIT & other CAN TOOLS.



Plymouth, Pearl and John Streets,
BROOKLYN, N. Y.,
U. S. A.



MEDAL AWARDED **PARIS EXPOSITION, 1878.**





WM. COOKE,

(Successor to **COOKE & BEGGS**),

Agent for the

HOPE

Vertical Engines,

AND A PATENT

STEAM TUBE CLEANER,

Working on an entirely new principle.

DEALER IN

Railway,
Steamship,
Manufacturers'
Mill and Miners'

SUPPLIES,

6 Cortlandt Street,
NEW YORK, N. Y.

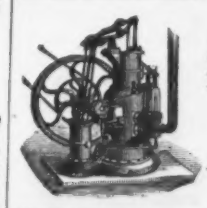
Catalogue on application.

LANE & BODLEY CO.,

MANUFACTURERS OF

STEAM ENGINES, SAW MILLS AND MINING MACHINERY.

LANE & BODLEY COMPANY, Cincinnati, Ohio.



AIR ENGINES. NO WATER. NO ENGINEER.

No extra insurance! Absolutely safe! Simple! Reliable! Durable! Most convenient and economical power known.

SHERRILL ROPER AIR ENGINE CO.,

Manufacturers of Air Engines, Elevators and Hoisting Machinery

91 & 93 Washington Street, New York.

NAT'L BOLT AND PIPE MACHINERY CO.,

Proprietors of National Head,
Mfrs. of Hand and Power Bolt and Pipe Cutters,

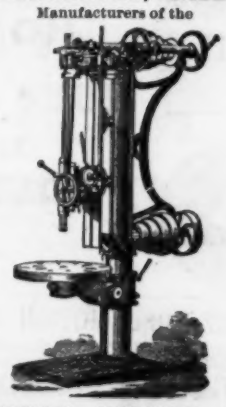
Bolt Pointers, Bolt Headers, Nut Machinery, Hot and Cold-Pressed Taps and Dies, &c.

Send for Circular.

Cleveland, Ohio.

P. BLAISDELL & CO.,

WORCESTER, MASS.,
Manufacturers of the



"BLAISDELL" UPRIGHT DRILLS

And other First-Class Machinists' Tools.



Send for Illustrated Price List.
Keystone Portable Forge Co.,
218 Carter St., Philadelphia.

THE PRATT & WHITNEY CO.,

Hartford, Conn., U. S. A.,

Make specialties of

DROP HAMMERS

Punching Presses, Hand Drilling Machines, Ratchet Drills, Combination Lathe Chucks, Cutters for Teeth of Gear Wheels, Screw Plates, Hand, Machine, Nut and Pipe Taps, Bolt Cutters, &c., &c.



WEST READING PIPE AND MACHINE WORKS,
Manufacturers of
Cast-Iron Water and Gas Pipe
of all sizes.
Valves and Hydrants, Flange Pipe and Lamp Posts. Machinery for Grist, Saw and Rolling Mills. Also the celebrated CANADA WATER WHEEL, the cheapest and best in the world. Send for pamphlet.
READING PA.

ROCK BREAKERS.

Blake's Patent Expired—End of Monopoly.

The undersigned, sole owners of the old Leviathan, Gates' patent, and the Brown's patent Rock breakers, will guarantee our crushers to break two tons to one of Blake's (or any other.) Send for circulars. Also Stamp Mills and all kinds of Mining Machinery made on short notice.

Office, *53 Canal Street, Chicago, Ill.*
GATES & SCOVILL IRON WORKS.

Shafting, Pulleys, Hangers, etc.,

a specialty. Send for Price List to

A. & F. BROWN,
57–61 Lewis St., New York.

Machinery, &c.

THE JUDSON GOVERNOR.

It is a common method to advertise Governors *without cost*, unless satisfactory to the customer, and then charge *High Prices* for doing what any good Governor will do. Various Governors inferior to the "Judson" are sold in this way, operating well enough for three months, to insure collection of the pay, but becoming useless after a year's wear—their construction lacking durability. The Judson Governor is guaranteed to be not only the best Regulator of Steam Engines, but also the most durable Governor made. Parties in buying other Governors should stipulate that their durability be guaranteed, and should also take care that they do not, for much inferior Governors, pay higher prices than those shown in the accompanying list. We guarantee the Judson Governor will do all any other Governor can do, and in accuracy and durability—the main essentials—we guarantee it shall do more.

Reduced Price List,

OCTOBER 15, 1878.

☞ For dimensions of Governor, see Illustrated Price List.



THE JUDSON PATENT

Improved Steam Governor.

Size, Inch.	Plain.	Bright Finished.	Extra for Spe'd'r	Stop Valve.
⅜	$15.00	$17.00	$1.90	....
½	16.00	18.00	1.90	....
1	18.00	20.00	2.00	....
1¼	20.00	23.00	2.25	....
1½	23.00	27.00	2.50	$6.00
2	27.00	31.00	2.75	7.50
2¼	32.00	37.00	3.25	9.00
2½	36.00	41.00	3.50	11.00
2¾	40.00	46.00	3.75	12.00
3	45.00	52.00	4.25	14.00
3½	54.00	62.00	4.50	17.00
4	64.00	73.00	5.00	21.00
4½	74.00	84.00	5.50	25.00
5	84.00	95.00	6.00	31.00
5½	97.00	109.00	6.50	37.00
6	112.00	125.00	7.00	42.00
7	132.00	146.00	8.00	50.00
8	160.00	176.00	9.00	60.00
9	180.00	198.00	10.00	75.00
10	200.00	220.00	12.00	....

No Charge for Boxing or Cartage.

JUNIUS JUDSON & SON, Rochester, N. Y.

HARTFORD STEAM BOILER INSPECTION AND INSURANCE CO.



Issues Policies of Insurance after a careful inspection of the Boilers

COVERING ALL LOSS OR DAMAGE TO

Boilers, Buildings and Machinery.

ARISING FROM

STEAM BOILER EXPLOSIONS.

The Business of the Company includes all kinds of STEAM BOILERS.

Full information concerning the plan of the Company's operations can be obtained at the

COMPANY'S OFFICE, HARTFORD, CONN.,

or at any Agency.

J. M. ALLEN, Pres. W. B. FRANKLIN, Vice-Pres. J. B. PIERCE, Sec.

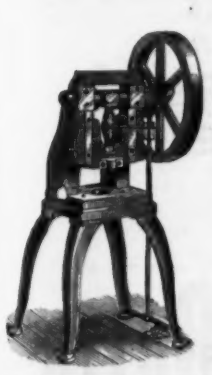
Board of Directors:

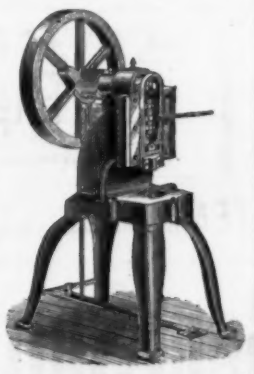
J. M. ALLEN, President.
LUCIUS J. HENDEE, Pres't Ætna Fire Ins. Co.
FRANK W. CHENEY, Ass't Treas. Cheney Brothers Silk Manufacturing Co.
CHARLES M. BEACH, of Beach & Co.
DANIEL PHILLIPS, of Adams Express Co.
GEO. M. BARTHOLOMEW, Pres't Amer. Nat'l Bank.
RICHARD W. H. JARVIS, Pres't Colt's Fire Arms Manufacturing Co.
THOMAS O. ENDERS, Sec'y Ætna Life Ins. Co.
LEVERETT BRAINARD, of Case, Lockwood & Brainard.
GEN. WM. B. FRANKLIN, Vice Pres't Colt's Pat. Fire Arms Mfg. Co.
GEO. CROMPTON, Crompton Loom Works, Worcester
WILLIAM ADAMSON, of Baeder, Adamson & Co., Philadelphia.
HON. THOS. TALBOT, Ex-Governor of Mass.
NEWTON CASE, Case, Lockwood & Brainard, Hartford
WILLIAM S. SLATER, Cotton Manufacturer, Providence, R. I.
NELSON HOLLISTER, of State Bank, Hartford.
D. R. SMITH, Pres't Springfield Fire & Marine Ins. Co.

A. H. MERRIMAN,

Patent Power

PUNCHING PRESSES.





WEST MERIDEN,

CONNECTICUT.

ASTONISHING POWER in FOOT and HAND PRESSES.



Punching, by foot, *3-4* hole in *5-16* iron 6 inches from edge.

Smaller sizes punch, by foot, *3-8* x *1-4*, and *1* inch by *1-8*, as rapidly as by power presses, at one-half the cost.

Our largest hand machines punch *1* inch hole in *3-8* iron, and shear bar *3-4* x *2* inches at a cut, any length, one man at the lever.

Highest prize, ***The Grand Medal of Progress***, has just been awarded us at the American Institute Exhibition.

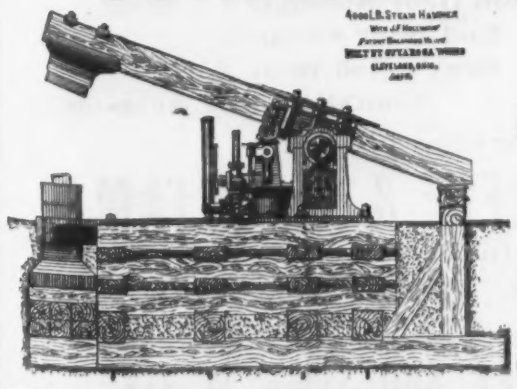
Our presses can also be run by steam power.



PEERLESS PUNCH and SHEAR CO.,

52 Dey Street, New York City.

CUYAHOGA WORKS



Manufactures

LAND

AND

Marine Engines,

BLAST FURNACE

Machinery,

STEAM

Hammers

Send for Circulars.

Cleveland, Ohio, U. S. A.



LOVEGROVE & CO.,

PHILADELPHIA, PA.,

MANUFACTURERS OF

BOILERS & ENGINES, ALL SIZES.

1-HORSE ENGINE AND BOILER, $150; 2-HORSE, $175; 3-HORSE, $200; 4-HORSE, $300; 5-HORSE, $375; 6-HORSE, $400; 8-HORSE, $425.

WARRANTED THE BEST. SEND FOR CIRCULAR.

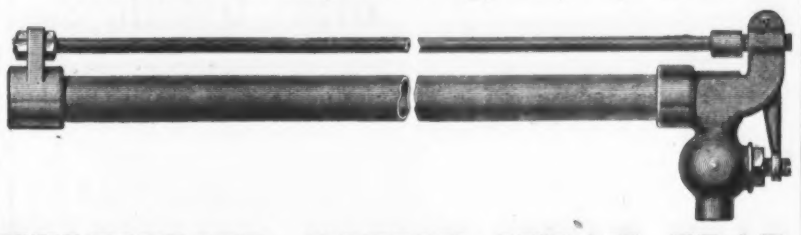
Machinery, &c.

WILLIAM SELLERS & CO.,

PHILADELPHIA,

MANUFACTURERS OF

Iron and Steel Working Machinery, Machinists' Tools, Shafting, Gearing, &c., Injectors.



MULTIPLIED MOTION STEAM TRAP.

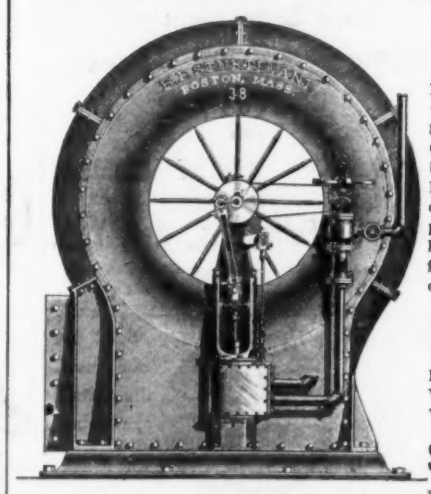
Suits any Location. Price, $12.

Send for circular giving particulars.

Branch Office, 79 Liberty Street, N. Y.

STURTEVANT

BLOWERS & EXHAUST FANS



Sturtevant Patent Steam Fan.

Sturtevant's Patent Steam Fan,

For Blowing Furnaces of all kinds, such as are provided with grate bars; especially adapted for Steam Boilers, Puddling and Heating Furnaces. Coal Screenings and all kinds of refuse coal may be successfully used for fuel by the use of these Fans to create blast. For forcing fresh air into, or taking foul air out from Coal Mines and other places needing ventilation, such as Hospitals, Asylums, Theaters and other Public Buildings, Manufacturing Establishments, &c. Also for numerous other uses where large volume of air is required.

Sturtevant Patent Exhaust Fan,

For removing Shavings and Dust from Wood-Working Machines, Dust from Sand and Emery Wheels, and for Ventilation.

Sturtevant Steel Pressure Blower,

For Cupola Furnaces and Forges. The Blower, which excels all others, produces *maximum* results with *minimum* power. Used in the largest establishments in the country, where the strongest blast is required.

Sturtevant Patent Improved Fan Blower,

For Steam Boilers, Puddling and Heating Furnaces.

Send for Illustrated Catalogue to

B. F. STURTEVANT, Patentee and Sole Manufacturer,

72 Sudbury Street, Boston, Mass.

PRESSES, DROP HAMMERS, DIES,

And Other Tools

FOR THE MANUFACTURE OF ALL KINDS OF

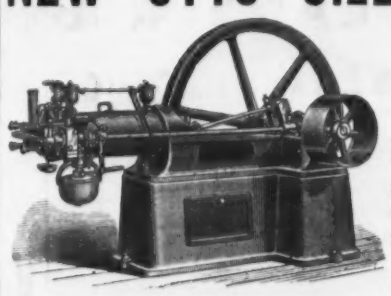
SHEET METAL GOODS,

Drop Forgings, &c.

THE STILES & PARKER PRESS CO.,

Middletown, Conn.

NEW OTTO SILENT GAS ENGINE.



Working Without Boiler, Steam, Coal, Ashes or Attendance.

Started Instantly by a Match, it gives Full Power Immediately.

When Stopped, all Expense Ceases.

No explosions, no fires nor cinders, no gauges, no pumps, no engineer or other attendant while running. Recommended by insurance companies.

UNSURPASSED IN EVERY RESPECT for hoisting in warehouses, printing, ventilating, running small shops, &c.

2, 4 and 7 H. P. and upwards. Built by

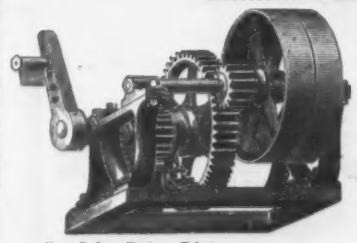
SCHLEICHER, SCHUMM & CO.,

Engineers and Machinists,

3045 Chestnut Street, Philadelphia.

BEECHER & PECK,

Successors to Milo Peck, Manufacturers of



Send for Price List.

PECKS DROP PRESS

11 Regular Sizes. Hammers from 50 lb. to 2500 lb.

WE HAVE A LARGE STOCK OF SPECIAL DROP PATTERNS.

Special attention given to the making of all Drop Dies.

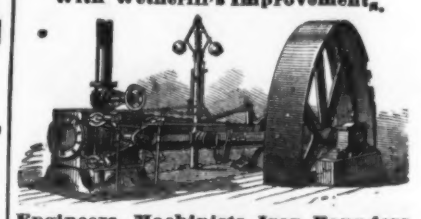
Special Machinery Fitted Up to Order.

NEW HAVEN, CONN.

Machinery, &c

Corliss Engine Builders

With Wetherill's Improvement.



Engineers, Machinists, Iron Founders and Boiler Makers.

ROBT. WETHERILL & CO. Chester, Pa.

Northern Liberty Works,

312 and 314 Green Street,

PHILADELPHIA, PA.

ALFRED BOX & CO.,

Manufacturers of

Universal Radial and Stationary Drills, Engine Lathes, Milling Machines, Steam Engines, Shafting, Hangers, Pulleys, Hoists, Elevators, Patterns for Chain Wheels, &c.

Also Sole Manufacturers of

BOX'S PATENT

Double Screw Portable Hoisting Machine.



Lift.	To raise.	Price.	Extra lift per foot.
8 ft.	1,000 lbs.	$25.00	$1.20
8 "	2,000 "	30.00	1.50
8 "	3,000 "	40.00	1.75
9 "	4,000 "	60.00	2.00
10 "	6,000 "	75.00	2.20
10 "	8,000 "	95.00	2.40
12 "	12,000 "	150.00	3.75
12 "	16,000 "	225.00	4.75
12 "	20,000 "	300.00	6.00

Your orders respectfully solicited.

ALFRED BOX & CO.

Established 1867.

Edwin Harrington & Son

MANUFACTURERS OF

PATENT EXTENSION, SCREW CUTTING GAP and TERRET

LATHES,

Iron Planers,

BORING MILLS,

Radial, Upright, Suspension, Multiple, Lever, Carriage Makers' Blacksmiths' Hand and Power Post

DRILLS,

and a variety of other MACHINISTS' TOOLS.

Patent

Double Chain Screw Pulley Blocks,

unrivalled for *Durability, Safety* and *Power*.

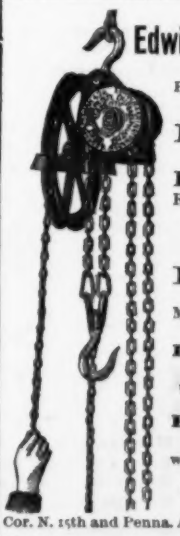
Patent Double Chain Quick-Lift Hoists,

with Brake for quick and easy lowering.

Circulars furnished.

WORKS AND OFFICE,

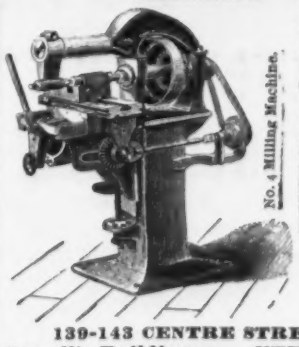
Cor. N. 15th and Penna. Ave., Philadelphia, Pa., U.S.A





E. E. GARVIN & CO.,

Manufacturers of



Milling Machines, Drill Presses,

Hand Lathes, Tapping Machines, Cutter Grinders and Wood Planers. Milling Cutters, all shapes and sizes. Gear Cutting and Milling in all its branches.

No. 4 Milling Machine.

139-143 CENTRE STREET,

Cornell's Building, NEW YORK.

☞ Send for Illustrated Catalogue.



BOYNTON & PLUMMER,

Manufacturers of

IMPROVED

Patent Drills,

Adapted to Blacksmiths' and Carriage Makers' use.

Bolt Cutters and Tire Benders,

From New and Improved Patterns, Also,

Hand and Power Shapers.

54 Hermon Street,

WORCESTER, MASS.

TUBAL SMELTING WORKS.

780 South Broad Street, PHILADELPHIA.

PAUL S. REEVES,

MANUFACTURER OF

ANTI-FRICTION METALS.

CAR & MACHINERY BRASSES, INGOT BRASS AND SOLDER, WHITE BRASS.

Old Metals and Brass Turnings Wanted.

ESTABLISHED 1842.

WM. & HARVEY ROWLAND,

PHILADELPHIA,

P. O. Address: Frankford, Philad'a. } MANUFACTURERS OF ALL KINDS OF

Elliptic, Platform AND C Springs,

"Brewster Side Bar Combination Patented" Springs.

MADE EXCLUSIVELY FROM

SWEDISH STOCK, OIL-TEMPERED and WARRANTED.

Swedish Tire, Toe, Blister and Spring Steel.

CAST SPRING AND PLOW STEEL.
CAST SHOVEL, HOE AND MACHINERY STEEL.

OXFORD TOE, SLEIGH, TIRE AND SPRING STEEL.
BESSEMER SHOVEL AND PLOW STEEL.
BESSEMER MACHINERY AND CULTIVATOR STEEL.

RE-ROLLED NORWAY SHAPES.

NORWAY NAIL RODS ROLLED AND SLIT FROM SUPERIOR BRANDS.

FRANCIS B. GRIFFIN. CHARLES E. JENNINGS.

C. E. JENNINGS & CO.,

98 Chambers St., New York.

Sole Agents for L'HOMMEDIEU and WATROUS & CO., Ship Augers and Bridge Builders' Augers; E. H. TRACY, Scotch Pattern and Railroad Augers; NOBLES MFG. CO., Carpenters' Augers, Bits and Drawing Knives; WRIGGLESWORTH SHEAR CO.; GEO. S. WILDER, Merrill's Chisels and Drawing Knives; CONN. VALLEY HARDWARE CO., Solid Head Bits; NEWCOMB BROS., Hand, Moulders' and Blacksmiths' Bellows. Agents for H. H. MAYHEW & CO., Shepardson's Bits; BENJAMIN PIERCE, Auger Bits; PHILLIPS MFG. CO., Boring Machines; C. L. JEFFORDS, Axes and Hatchets; BARBER'S Patent Countersinks; BONNEY'S Hollow Augers; L. D. FROST'S Philadelphia Carriage Bolts; Riverside Fork Mills.



This Cut is a full size Illustration of the Patent Solid Head Auger Bit. 8-16

This Bit has no equal for boring *hard* wood. In cross grain, knots, and the end of the wood its great superiority over any other is strongly marked. The solid head guarantees a *perfectly straight hole.*

C. E. JENNINGS & CO., Sole Agents.

ANTI-TARNISH SILVER TISSUE PAPER

Resists Action of Gases,
Keeps Silver Plate and Other Metals Always Bright, Except Iron and Steel.

SOLE MANUFACTURERS,

H. V. BUTLER, Jr., & CO., 34 Reade St., N. Y.



WATERBURY MFG. CO.,

WATERBURY, CONN.,

MANUFACTURERS OF



BRASS MACHINE SCREWS

Of every description, at lowest cash prices. Also,

All Styles Nuts, Washers, Ferrules and Brass Goods Generally.

PLUMBERS' AND GAS FITTERS' SUPPLIES A SPECIALTY.

The privilege of estimating on special articles solicited.



Manufacturer of **TAPS AND DIES** of every description.

Also, for sale low, **UNITED STATES STANDARD GAUGES,** from ¼ to 3 inch.

IMPROVED STEEL CASTINGS.

Under Hainsworth's Patents.

We make Castings practically free from blow-holes, of steel which is as soft and as easily WORKED and WELDED as Wrought Iron, yet is STIFF, STRONG and DURABLE, with a TENSILE STRENGTH of not less than 65,000 lbs. to the square inch. In short, OUR CASTINGS UNITE THE QUALITIES OF STEEL AND WROUGHT IRON.

Wheels and Pinions, Dies and Hammer Heads, Engine and Machinery Castings of all descriptions Railroad Frogs and Crossings, Plowshares, Moldboards and Landsides.

WE USE NO CAST IRON.

Send for circular.

PITTSBURGH STEEL CASTING CO.,

PITTSBURGH, PA.

Merrill Brothers, Successors to C. MERRILL & SONS, 26 First Street, Brooklyn, N. Y. **DROP** HAMMERS, FORGINGS and POWER PRESSES.

The Reading Bolt & Nut Works. **J. H. Sternbergh,** Reading, Pa., U. S. A.

Manufacturer of a Superior Quality of

MACHINE BOLTS, HOT PRESSED NUTS,

Railroad Track Bolts, Boiler and Bridge Rivets, Bolt Ends, Washers, Wood Screws, Turnbuckles, Refined Bar Iron, Etc., Etc., Etc.

STANLEY G. FLAGG & CO.

PHILADELPHIA, PA.

Office and Warehouse,

No. 216 & 218 N. THIRD ST.

Manufacturers of

STEEL CASTINGS.

A Substitute for Steel and Wrought Forgings.

☞ Circulars sent on application. ☜

Steel Castings,

Light and heavy **Steel Castings** of superior metal, solid and homogeneous. All work guaranteed. Send for circular.

EUREKA CAST STEEL CO., Chester, Pa.

Office: 307 Walnut St., Phila.

IF YOU WANT A BABY

OR

Racket Lantern

that beats the world, you can find it, together with

TUBULAR, DIAMOND,

No. 74, No. 76,

POLICE, FARM LANTERNS,

AND

Tubular Street, Square and Side Lamps,

Square Station Lamps,

CORPORATION

AND

NEW YORK STREET LAMPS,

AT

54 & 56 Fulton St., New York.

R. E. DIETZ.

Machines at Reduced Prices, and Wheels Guaranteed.

LEHIGH VALLEY EMERY WHEEL CO.

Send for our new illustrated catalogue.

Weissport, Pa.

E. S. LEE & CO,



No. 4 West Ave., Rochester, N. Y., U. S. A., Sole Manufacturers of the

Celebrated Waters Tree Pruner,

Made of best steel in any desired lengths. Combines slotted hook and compound lever principles not seen in any other. Having no competition for public favor it has received the highest awards in this and foreign countries as being the best.

Send for our new circular and price list.

Day, Farrington & Co.,

Manufacturers of and Dealers in

LOCKSMITHS' AND BELLHANGERS' SUPPLIES.

Locks, Knobs, Night Latches, Gongs, Blank Keys,

Wrought Store Door and Flush Bolts.

Electro and Hand Silver Platers, Hand-Plated Name, Number and Pew Plates.

Office, 295 Third Avenue, NEW YORK.

Factory, Brooklyn, E. D.



The Patent Combined

Dinner-Pail and Lantern.

The most perfect Dinner Pail in the world. Hot coffee for dinner and a Lantern at night.

Manufactured by JOS. HAIGHT, PORT CHESTER, N. Y.

Sent by express on receipt of $1.00. Special attention given to export orders. Traveling Agents Wanted.



AIR COMPRESSORS.

PRICES REDUCED. SEND FOR NEW CATALOGUE.

CLAYTON STEAM PUMP WORKS,

14 AND 16 WATER STREET, BROOKLYN, N.Y.

Scranton Brass Works,



J. M. EVERHART,

Manufacturer of

BRASS WORK,

For Water, Gas & Steam. Also

Carr & Wilcox's Patent Cut Files.

Will cut faster, wear longer, and clog less than any File in the market.



Cliff Street, SCRANTON, PA.

MORGAN & CO., Agents, 99 John St., New York City.

RUSSELL, BURDSALL & WARD

Port Chester, N. Y.,

MANUFACTURERS OF

CARRIAGE, TIRE, PLOW, STOVE AND OTHER

BOLTS.

CARRIAGE BOLTS MADE FROM BEST SQUARE IRON A SPECIALTY.

JOHN RUSSELL CUTLERY CO.,

Green River Works,

MANUFACTURERS OF

Table and Pocket Cutlery,

BUTCHERS', HUNTERS', PAINTERS', DRUGGISTS' & HOUSEHOLD KNIVES

IN ALL STYLES AND VARIETIES.

FIRST HOME MANUFACTURERS.

New York Office, 90 Chambers Street.

J. RUSSELL & CO. 1834 GREEN RIVER WORKS, MASS.

Factories, Turners Falls, Mass.

STEEL CASTINGS

FROM 1-4 TO 10,000 LBS. WEIGHT,

True to pattern, sound and solid, of unequaled strength, toughness and durability. An invaluable substitute for forgings or cast iron requiring three-fold strength. Gearing of all kinds, Shoes, Dies, Hammerheads, Crossheads for Locomotives, etc. 12,000 crank Shafts of this steel now running proved superior to wrought iron. CRANK SHAFTS, CROSSHEADS AND GEARING ARE SPECIALTIES. Circulars and Price Lists free. Address

CHESTER STEEL CASTINGS CO.,

Works, Chester, Pa. 407 Library St., Philadelphia.

E. M. BOYNTON,

Manufacturer of all kinds of



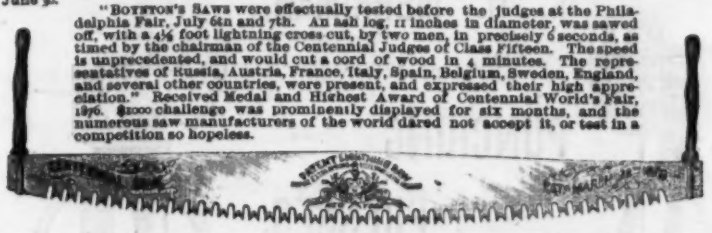
First-Class Saws, Saw Frames, Cross-Cut Handles, Tools, Files, &c. Also Sole Proprietor and Manufacturer of the Genuine Patent Lightning Saw,

80 BEEKMAN STREET, NEW YORK.

TRIAL OF THE IMPROVED LIGHTNING SAW.

The Emperor Dom Pedro, accompanied by Director General Goshorn, Superintendent Albert, and others, visited Machinery Hall at the Centennial on the evening of June 28th. Among other things inspected, at the invitation of E. M. BOYNTON, of New York, they witnessed a trial of the *New Lightning Saw*, patented March 28, 1876. Two men, with one of these saws, cut off a sound log of gum-wood, one foot extreme diameter, in seven seconds, or at the rate of a cord of wood in five minutes. Messrs. Corliss, Morell, Lynch, and other members of the commission, witnessed the trial and timed the cutting. The Emperor remarked, "That was fast, very fast cutting." Last evening the Emperor made another examination of the saw.—*Philadelphia Press*, June 30.

"BOYNTON'S SAWS were effectually tested before the judges at the Philadelphia Fair, July 6th and 7th. An ash log, 11 inches in diameter, was sawed off, with a 4½ foot lightning cross cut, by two men, in precisely 6 seconds, as timed by the chairman of the Centennial Judges of Class Fifteen. The speed is unprecedented, and would cut a cord of wood in 4 minutes. The representatives of Russia, Austria, France, Italy, Spain, Belgium, Sweden, England, and several other countries, were present, and expressed their high appreciation." Received Medal and Highest Award of Centennial World's Fair, 1876. $2000 challenge was prominently displayed for six months, and the numerous saw manufacturers of the world dared not accept it, or test in a competition so hopeless.



Gem Spiral Spring Butts

Single Acting. Per Pair.	Japanned. Size.	Double Acting. Per Pair.
$0.80	3 inch.	$1.60
1.00	4 inch.	2.00
1.25	5 inch.	2.50
1.75	6 inch.	3.50
2.25	7 inch.	4.50
3.25	8 inch.	6.50
4.50	10 inch.	9.00
6.00	12 inch.	12.00

ALSO,

American Spiral Spring Butts,
Gem Coil Door Springs,
Star Coil Door Springs,
Torrey Rod Door Springs,
Bee Rod Door Springs,
Gray's Rod Door Springs,
Domestic Blind Adjusters.

☞ Send for Complete Catalogue.

VAN WAGONER & WILLIAMS,

Manufacturers,

82 Beekman Street, New York.

BALTIMORE RIVET AND SPIKE WORKS.

Rivets, Spikes, Bolts, Nuts,



Washers, Bolt Ends, Wood Screws, Track Bolts.

WM. GILMOR of WM., cor. President & Fawn Sts.